

Wednesday, 15 June 2005

08:30–12:00 Registration and poster viewing

09:35–17:15 Nurses Meeting

09:00–10:20

S01: Basic research 1

Chairs: D. Wilcox, L. Baskin

#-1 (P)

Muscle development of the fetal interureteric junction and the internal vesical sphincter

JOSEF OSWALD, ANDREAS LUNACEK, CHRISTIAN SCHWENTNER, GEORG BARTSCH^{*}, HELGA FRITSCH[†] and CHRISTIAN RADMAYR
Medical University Innsbruck, Pediatric Urology, Innsbruck, AUSTRIA - ^{*} *Medical University Innsbruck, Urology, Innsbruck, AUSTRIA* - [†] *Medical University Innsbruck, Anatomy, Embryology, Histology, Innsbruck, AUSTRIA*

#-2 (P)

Growth curves of the fetal prostate in relation to gestational age and the maternal testosterone surge

ANDREAS LUNACEK, JOSEF OSWALD, CHRISTIAN SCHWENTNER, GEORG BARTSCH^{*}, HELGA FRITSCH[†] and CHRISTIAN RADMAYR
Medical University Innsbruck, Pediatric Urology, Innsbruck, AUSTRIA - ^{*} *Medical University Innsbruck, Urology, Innsbruck, AUSTRIA* - [†] *Medical University Innsbruck, Anatomy, Embryology, Histology, Innsbruck, AUSTRIA*

#-3 (P)

Decreased fibronectin expression correlates with detrusor disorganisation in obstructed human fetal bladders

LIAM MCCARTHY, ADRIAN WOOLF and DUNCAN WILCOX^{*}
Institute of Child Health, Nephro-Urology, London, UNITED KINGDOM - ^{*} *University of Texas, Department of Urology, Dallas, USA*

#-4 (P)

Fibronectin modulates fetal detrusor smooth muscle cell development mediated by integrin alpha5 beta1

LIAM MCCARTHY, ADRIAN WOOLF and DUNCAN WILCOX^{*}
Institute of Child Health, Nephro-Urology, London, UNITED KINGDOM - ^{*} *University of Texas, Department of Urology, Dallas, USA*

#-5 (P)

Expression of 5alpha-reductase1 and 5alpha-reductase2 in human prostates during fetal development

ANDREAS LUNACEK, JOSEF OSWALD, CHRISTIAN SCHWENTNER, GEORG BARTSCH^{*}, HELMUT KLOCKER^{*}, HELGA FRITSCH[†], L THOMAS[‡], R RITTMAS[‡] and CHRISTIAN RADMAYR
Medical University Innsbruck, Pediatric Urology, Innsbruck, AUSTRIA - ^{*} *Medical University Innsbruck, Urology, Innsbruck, AUSTRIA* - [†] *Medical University Innsbruck, Anatomy, Embryology, Histology, Innsbruck, AUSTRIA* - [‡] *Dalhousie University, Biochemistry, Halifax, CANADA*

#-6 (P)

Three-dimensional endothelialized autologous vesical graft constructed in a collagen sponge

STÉPHANE BOLDUC, MARTINE MAGNAN, MARIE-FRANCE CHAMPIGNY and FRANÇOIS BERTHOD

LOEX, Quebec, CANADA

#-7 (P)

Molecular genetics of obstructive uropathy in the mouse

OLGA CABELLO, PAUL OVERBEEK^{*} and LUAN TRUONG[†]
Baylor College of Medicine, Molecular and Cellular Biology, Houston, USA - ^{*} *Baylor College of Medicine, Molecular and Cellular Biology, Houston, USA* - [†] *The Methodist Hospital, Department of Pathology and Laboratory Medicine, Houston, USA*

#-8 (P)

Platlet derived growth factor is increased after exposure to elevated hydrostatic pressure

CEM AKBAL, MD, SANG DON LEE, MD^{*} and MARTIN KAEFER[†]
Ankara, TURKEY - ^{*} *Pusan National University Hospital & College of Medicine, Department of Urology, Busan, KOREA, REPUBLIC OF* - [†] *Indiana university, dept. of pediatric urology, Indianapolis, USA*

#-9 (P)

Inhibition of rho kinase increases compliance in murine whole bladders

ANDY CHANG, STEPHEN ZDERIC, DOUGLAS CANNING and SAMUEL CHACKO^{*}
Children's Hospital of Philadelphia, Pediatric Urology, Philadelphia, USA - ^{*} *University of Pennsylvania, Urology, Philadelphia, USA*

#-10 (P)

Loss of interstitial cells of cajal and gap junction protein connexin 43 at the ureterovesical junction in children with vesicoureteral reflux

CHRISTIAN SCHWENTNER, JOSEF OSWALD, ANDREAS LUNACEK, HELGA FRITSCH^{*}, GEORG BARTSCH[†] and CHRISTIAN RADMAYR
Medical University Innsbruck, Pediatric Urology, Innsbruck, AUSTRIA - ^{*} *Medical University Innsbruck, Anatomy, Embryology, Histology, Innsbruck, AUSTRIA* - [†] *Medical University Innsbruck, Urology, Innsbruck, AUSTRIA*

#-11 (PWP)

High surviving expression in the ureteral wall of high degree vesicoureteral reflux in children

JOSEPH BINYAMINI, LETIZIA SCHREIBER^{*}, DAN GRISARU[†], YUVAL BAR-YOSEF, HAIM MATZKIN[‡] and JACOB BEN CHAIM[‡]
Tel Aviv Medical Center, Pediatric Urology Unit Department Of Urology, Tel Aviv, ISRAEL - ^{*} *The tel Aviv Medical Center, Pathology, Tel Aviv, ISRAEL* - [†] *The tel Aviv Medical Center, Gynecology, Tel Aviv, ISRAEL* - [‡] *The tel Aviv Medical Center, Pediatric Urology Unit Department Of Urology, Tel Aviv, ISRAEL*

#-12 (P)

Morphology and apoptosis in the fetal kidney in ovine bladder outflow obstruction

NAEEM SAMNAKAY, JILLIAN ORFORD, ANDREW BARKER, ADRIAN CHARLES^{*}, TIMOTHY MOSS[†], PHILIPPA TERRY[‡] and JOHN NEWNHAM[†]
Princess Margaret Hospital for Children, Department of Surgery, Perth, AUSTRALIA - ^{*} *Princess Margaret Hospital for Children, Department of Pathology, Perth, AUSTRALIA* - [†] *University of Western Australia, School of Women's and*

Infants' Health, Perth, AUSTRALIA - ‡ Institute for Child Health Research, Perth, AUSTRALIA

#-13 (P)

Muscarinic receptor expression increases following exposure to elevated intravesical pressures
CEM AKBAL, MD, SANG DON LEE, MD* and MARTIN KAEFER†
Ankara, TURKEY - * Pusan National University Hospital & College of Medicine, Department of Urology, Busan, KOREA, REPUBLIC OF - † indiana university, dept of pediatric urology, Indianapolis, USA

#-14 (P)

Collagen prolyl 4-hydroxylase activity is upregulated in bladder outlet obstruction
SANG DON LEE, MD, CEM AKBAL* and MARTIN KAEFER†
Pusan National University Hospital & College of Medicine, Department of Urology, Busan, KOREA, REPUBLIC OF - * Ankara, TURKEY - † Riley hospital for children, Dept. of Pediatric Urology, Indianapolis, USA

10:20–10:40 Coffee break

10:40–12:00

S02: Basic research 2

Chairs: C. Radmayr, B. Kogan

#-15 (P)

Anorectal malformation in ephrin-b2lacZ/lacZ mutant mice
NILDA GARCIA, MARIA MARTINEZ*, CHRISTOPHER DRAVIS†, DOLORES VASQUEZ‡, MARK HENKEMEYER† and LINDA BAKER¶
UT Southwestern, Pediatric Surgery, Dallas, USA - * UT Southwestern, Pediatric Surgery, Dallas, USA - † UT Southwestern, Center for Human Growth & Development, Dallas, USA - ‡ UT Southwestern, Urology, Dallas, USA - ¶ University of Texas Southwestern, Urology, Dallas, USA

#-16 (P)

Potassium channels regulate spontaneous activity in the neonatal rat bladder
HSI-YANG WU, YUEN-KENG NG* and WILLIAM C. DE GROAT*
Children's Hospital of Pittsburgh, Pediatric Urology, Pittsburgh, USA - * University of Pittsburgh, Pharmacology, Pittsburgh, USA

#-17 (P)

The contractile properties of detrusor smooth muscle in human bladder exstrophy
NAVROOP JOHAL, CHRIS FRY* and PETER CUCKOW
Institute of Urology & Nephrology, London, UNITED KINGDOM - * Institute of Urology & Nephrology, London, UNITED KINGDOM

#-18 (P)

Effects of endothelin-a-receptor antagonists on electrostimulation-induced bladder contractions in vivo
J. SCHEEPE, J. VAN DEN HOEK, K.-P. JUENEMANN* and P ALKEN*
Erasmus MC, pediatric urology, Rotterdam, NETHERLANDS - * University Hospital Mannheim, Urology, Mannheim, GERMANY

#-19 (P)

The role of pax-2 in the apoptotic response of renal tubular epithelium following ureteral obstruction
OLEG LOUTOCHIN, MOAMEN AMIN*, TIFFANY COHEN†, PAUL GOODYEAR‡ and ROMAN JEDNAK¶
McGill University, MCH, Urology, Montreal, CANADA - * Al-Azhar University, Faculty of Medicine, Urology, Cairo, EGYPT - † McGill University, Nephrology, Montreal, CANADA -

‡ McGill University, MCH, Nephrology, Montreal, CANADA - ¶ McGill University, MCH, Urology, Montreal, CANADA

#-20 (P)

Matrix metalloproteinases (mmp) mediate hypoxia-induced erk1/2 mitogen activated protein kinase (mapk) activation and bladder smooth muscle cell (bsmc) growth
DARIUS BAGLI, NESRIN SABHA*, MARTA SZYBOWSKA* and ASHISH JAIRATH*
Research Institute-The Hospital For Sick Children, Urology Research, Toronto, CANADA - * Research Institute - The Hospital For Sick Children, Urology Research, Toronto, CANADA

#-21 (P)

Increased expression of hepatocyte growth factor in fetal sheep kidney with obstructive nephropathy
OMER OGE, ROSALYN ADAM, JOSEPH KHOURY and CRAIG PETERS
Children's Hospital, Harvard Medical School, Department of Urology, Boston, Ma, USA

#-22 (P)

Complete unilateral ureteral obstruction in the fetal lamb. long-term outcomes on renal tissue development
PIERRE-YVES MURE, THOMAS GELAS, FRÉDÉRIQUE DIJOU*, SYLVIANE GUERRET†, DANIEL HARTMANN‡ and PIERRE MOURIQUAND
Hôpital Debrousse, Pediatric Surgery, Lyon Cedex 05, FRANCE - * Hôpital Debrousse, Pathology, Lyon Cedex 05, FRANCE - † Université Claude Bernard Lyon I, Laboratory of Biomaterials, Lyon Cedex 08, FRANCE - ‡ Université Claude Bernard Lyon I, Laboratory of Biomaterials, Lyon Cedex 08, FRANCE

#-23 (P)

Genetic studies on human urothelial cells in long-term cultures
MAGDALENA FOSSUM, FREDRIK LUNDBERG*, KERSTIN HOLMBERG†, JACQUELINE SCHOUMANS‡, GUNNAR KRATZ¶ and AGNETA NORDENSKJÖLD§
Dept. of Woman and Child Health, Karolinska Institutet, Pediatric Surgery, Stockholm, SWEDEN - * Karolinska Institutet, Center of Molecular Medicine, Stockholm, SWEDEN - † Karolinska Institutet, Center of Molecular Medicine, Clinical Genetics, Stockholm, SWEDEN - ‡ Karolinska Institutet, Center of Molecular Medicine, Clinical Genetics, Stockholm, SWEDEN - ¶ Dept. of Biomedicine and Surgery, Linköping University, Plastic and reconstructive Surgery, Linköping, SWEDEN - § Center of Molecular Medicine, Karolinska institutet, Pediatric Surgery, Stockholm, SWEDEN

#-24 (P)

Global gene expression patterns in mouse wolffian duct development
GERALD MINGIN, DAVID STAHL*, BIFING GAO† and HARI KHOUL*
Denver Children's Hospital, Urology, Denver, USA - * The University of Colorado, Surgery/Urology, Denver, USA - † The University of Colorado, Medicine, Denver, USA

#-25 (P)

The c-terminal ca binding domain of sparcs confers anti-spreading activity to human urothelium
RICHARD GRADY, JAMES BASSUK, MICHAEL MITCHELL*, WALDO FENG† and CATHERINE DELOSTRINOS
Children's Hospital, Urology, Seattle, USA - * Children's Hospital, Urology, Seattle, USA - † Children's Urology, Urology, Las Vegas, USA

#-26 (P)

Genome-wide linkage analysis reveals two susceptibility loci associated with cryptorchidism in the le/orl rat

JULIA BARTHOLD, XIAOLI SI[†] and MARCELLA DEVOTO[‡]
A.I. duPont Hospital for Children, Surgery/Urology, Wilmington, USA - * A.I. duPont Hospital for Children, Surgery/Urology, Wilmington, USA - † A.I. duPont Hospital for Children, Genetic Epidemiology, Wilmington, USA

#-27 (P)

Failure of shortening and inversion of the perinatal gubernaculum in the cryptorchid le/orl rat

JULIA BARTHOLD, XIAOLI SI and KATIA SOL-CHURCH^{*}
A.I. duPont Hospital for Children, Surgery/Urology, Wilmington, USA - * A.I. duPont Hospital for Children, Research/Biomolecular Core, Wilmington, USA

12:00–13:00 Lunch and Chairmen Lunch

13:00–13:30 Opening Ceremony

13:40–14:30

S03: Augmentation / Diversion

Chairs: P. Malone, R. Gonzalez

#-28 (P)

Contractile and relaxation properties of native bladder and ileal patch on ileal augmentation experimental model in rats
FAZIL TUNCAY AKI, MURAT KOSAN, UMUT GONULALAN, GAYE HAFEZ^{*}, OZAN OZGUNES^{*}, BULENT OZTURK[†], SERAP GUR^{*} and MESUT CETINKAYA[†]

Ankara Numune Research and Education Hospital, 2nd Urology Clinic, Ankara, TURKEY - * Ankara University, Faculty of Pharmacy, Pharmacology, Ankara, TURKEY - † Ankara Numune Research and Education Hospital, 2nd Urology Clinic, Ankara, TURKEY

#-29 (P)

Bladder augmentation with an acellular dermal biomatrix (adb) in a diseased animal model

CEM AKBAL, MD, SANG DON LEE, MD^{*} and MARTIN KAEFER[†]
Ankara, TURKEY - * Pusan National University Hospital & College of Medicine, Department of Urology, Busan, KOREA, REPUBLIC OF - † Indiana University, dept of pediatric urology, Indianapolis, USA

#-30 (PWP)

Total continent reconstruction versus staged mace and catheterizable urinary channels

PETER METCALFE, ANTHONY CASALE, MARTIN KAEFER, ANDY DUSSINGER, KIRSTAN MELDRUM, MARK CAIN and RICHARD RINK
Indiana University, Pediatric Urology, Indianapolis, USA

#-31 (PWP)

Variability of augmentation cystoplasty rates in patients with spina bifida among large US children's Hospitals registered with the phis database

THOMAS LENDVAY, CHARLES COWAN^{*}, MICHAEL MITCHELL, BYRON JOYNER and RICHARD GRADY
Seattle Children's Regional Medical Center, Urology, Seattle, USA - * Seattle Children's Regional Medical Center, Pediatrics, Seattle, USA

#-32 (SO)

Comparative analysis of clinical outcomes with alternate methods of enterocystoplasty

GORDON MCLORIE, RICARDO GONZALES^{*}, GAURAV BANDI^{*} and OSAMA AL-OMAR^{*}
CHILDRENS HOSP MICHIGAN, PEDIATRIC UROLOGY, Detroit, USA - * PEDIATRIC, UROLOGY, Wilmington, USA

#-33 (SO)

Appendicovesicostomy versus Monti for Mitrofanoff channel- the Indiana experience in over 300 patients

ANDREW DUSSINGER, MARK CAIN, ANTHONY CASALE^{*}, MARTIN KAEFER^{*}, KIRSTEN MELDRUM^{*} and RICHARD RINK^{*}
Riley Childrens Hospital, Urology, Indianapolis, USA - * Riley Children's Hospital, Urology, Indianapolis, USA

#-34 (PWP)

The serosal lined extramural tunnel (Ghoneim) principle in the creation of a catheterizable channel in bladder reconstruction

TARKAN SOYGUR, NIHAT ARIKAN, ALI ERSIN ZUMRUTBAS and OMER GULPINAR

Ankara University, School Of Medicine, Department Of Urology, Division Of Pediatric Urology, Ankara, TURKEY

#-35 (SO)

Ureterocystoplasty: videourodynamic assessment

MIGUEL PODESTA
Hospital de Niños Ricardo Gutierrez, Urology Unit, Department of Surgery, Buenos Aires, ARGENTINA

#-36 (SO)

Shunt dysfunction after perforation of the augmented bladder

GILIAN BARKER, GÖRAN LÄCKGREN^{*}, ARNE STENBERG and KAI ARNELL[†]

Section of Urology, Dept. of Pediatric Surgery, Uppsala, SWEDEN - * Section of Urology, Dept. of Ped. Surgery, Uppsala, SWEDEN - † Pediatric surgery, Dept. of Pediatric Surgery, Uppsala, SWEDEN

14:30–15:10

S04: Anorectal malformation - neuropathic bladder

Chairs: T. Boemers, T. Casale

#-37 (P)

13q critical region for anorectal and urogenital anomalies

NILDA GARCIA, LANE SANTOS^{*}, OLIVER BARTSCH[†], ROGER SCHULTZ[‡], ANDREW ZINN^{*} and LINDA BAKER[¶]
University of Texas Southwestern, Surgery, Dallas, USA - * University of Texas Southwestern, McDermott Center for Human Growth & Development, Dallas, USA - † Technische Universität Dresden, Institut für Klinische Genetik, Dresden, GERMANY - ‡ University of Texas Southwestern, Cytogenetics, Dallas, USA - ¶ University of Texas Southwestern, Urology, Dallas, USA

#-38 (SO)

Outcomes in adult females after anorectal malformation repair

MELISSA DAVIES, DUNCAN WILCOX^{*}, CHRISTOPHER WOODHOUSE[†] and SARAH CREIGHTON
University College London, Academic Department of Obstetrics & Gynaecology, London, UNITED KINGDOM - * University of Texas, Department of Urology, Dallas, USA - † University College Hospitals London, Institute of Urology & Nephrology, London, UNITED KINGDOM

#-39 (SO)

Clinical and urodynamic outcome of tethered cord release
LUIS ANTONIO GUERRA, JOHN PIKE, JULIE MILKS*
and MICHAEL LEONARD

CHEO - University of Ottawa, Pediatric Urology, Ottawa,
CANADA - * CHEO - University of Ottawa, Pediatric
Urodynamics, Ottawa, CANADA

#-40 (P)

**Urodynamic patterns of myelomeningocele patients who
develop spontaneous continence during conservative
treatment through puberty**

SAKINEH HAJEBRAHIMI, MOHAMED EL SHERBINY*,
ROMAN JEDNAK and JL PIPPI SALLE

Montreal Children Hospital, Urology, Montreal, CANADA -
* McGill University, Montreal Children's Hospital, Pediatric
Urology, Montreal, CANADA

#-41 (P)

**Urological outcome in patients with caudal regression
syndrome, compared with meningomyelocele and spinal
cord lipoma.**

MICHELE TORRE, PIERO BUFFA, ARMANDO CAMA*
and VINCENZO JASONNI

GIANNINA GASLINI INSTITUTE, pediatric surgery, Genova,
ITALY - * GIANNINA GASLINI INSTITUTE, NEUROSURGERY,
Genova, ITALY

#-42 (P)

**First results of a survey to evaluate health-related quality of
life of children with a myelomeningocele**

IRIS KOERNER, CHRISTIANE SCHLUETER*, HILDEGARD LAX†
and HERBERT RUEBBEN‡

Universitätsklinikum, Klinik f. Urologie & Kinderurologie,
Essen, GERMANY - * Universitätsklinikum, Institut f.
Medizinische Informatik, Biometrie und Epidemiologie, Essen,
GERMANY - † Universitätsklinikum, Institut für Medizinische
Informatik, Biometrie und Epidemiologie, Essen, GERMANY -
‡ Universitätsklinikum Essen, Klinik f. Urologie &
Kinderurologie, Essen, GERMANY

15:10–15:45

S05: Hypospadias 1

Chairs: S. Tekgul, H. Snyder III

#-43 (P)

**Genome-wide linkage analysis for hypospadias susceptibility
genes**

AGNETA NORDENSKJOLD, LOUISE FRISÉN*, CILLA
SOEDERHAELL*, HOLGER LUTHMAN* and INGRID KOCKUM*
Pediatric Surgery, Dept of Women and Childs Health,
Karolinska Institutet, Stockholm, SWEDEN - * Karolinska
institutet, Dept of Molecular Medicine, Stockholm, SWEDEN

#-44 (PWP)

**Do patients with hypospadias and cryptorchidism share
a common phenotype ?**

GIACINTO MARROCCO, SANTIAGO ANDRES VALLASCIANI,
PAOLA GRAMMATICO* and SILVIA MAIORE*
S. Camillo Hospital, Pediatric Surgery, Rome, ITALY -
* University "La Sapienza", S. Camillo-Forlanini Hospital,
Medical Genetic, Rome, ITALY

#-45 (P)

**Post-operative testosterone and tissue healing following
repair of iatrogenic hypospadias in rabbits**

JOHN BROCK, MATTHEW HASSAN, ROMANO DEMARCO*,
MONICA REVELO†, MARK ADAMS and JOHN POPE

Vanderbilt University, Urology, Nashville, USA - * Vanderbilt
University, Urologic Surgery, Nashville, USA - † Vanderbilt
University, Pathology, Nashville, USA

#-46 (PWP)

**Experimental hypospadias repair in rabbits. An impedance
planimetry study**

MARIANNA LALLA, JENS CHRISTIAN DJURHUUS*,
LARS HENNING OLSEN† and TROELS MUNCH JORGENSEN†
Aarhus University Hospital Skejby, Pediatric Urology, Institute
of Clinical Medicine, Aarhus N, DENMARK - * Aarhus University,
Institute of Clinical Medicine, Aarhus N, DENMARK - † Aarhus
University Hospital Skejby, Pediatric Urology, Aarhus N,
DENMARK

#-47 (PWP)

**Early cellular and ultrastructural response to urethral
ischemia in rabbit hypospadias model**

A.M. KAJBAFZADEH, FARROKH TIRGARI*, PARVIN TAJIK,
A.M.E. RAZAVI*, KAVEH VEJDANI and SAEED AMANPOUR†
Tehran University of Medical Sciences, Paediatric Urology,
Tehran, IRAN (ISLAMIC REPUBLIC OF) - * Tehran University
of Medical Sciences, Pathology, Tehran, IRAN (ISLAMIC
REPUBLIC OF) - † Tehran University of Medical Sciences, Cancer
Institute of Iran, Tehran, IRAN (ISLAMIC REPUBLIC OF)

#-48 (SO)

**Long-term follow-up of direct visual urethrotomy for
management of short < 1cm urethral strictures following
hypospadias repair**

DOUGLAS HUSMANN, SUE RATHBUN and STEPHEN KRAMER
Mayo Clinic, Urology, Rochester, USA

#-49 (SO)

**Caudal bupivacaine vs penile block for analgesia in
hypospadias surgery**

HICHAM SIBAI, BADREDDINE HMAMOUCHE*, MOUNIA
ALZEMMOURI†, MOHAMED YAAKOUBI† and MOHAMED FEHRI†
Averroes University health center Casablanca, Morocco,
Pediatric Surgery, Casablanca, MOROCCO - * averroes
university health center, anesthesia, Casablanca, MOROCCO -
† averroes university health center, pediatric surgery,
Casablanca, MOROCCO

#-50 (PWP)

**A new variance to surgical reconstruction of the
concealed penis**

DONALD NGUYEN
Dayton's Children's Medical Center, Pediatric Urology,
Dayton, USA

15:45–16:15 Coffee break and poster viewing

16:15–17:00

S06: Obstruction & hydronephrosis

Chairs: A. Stenberg, D. Joseph

#-51 (SO)

**Does the magnitude of fetal renal pelvic dilation identify
obstructive postnatal hydronephrosis?**

DOUGLAS COPLEN, PAUL AUSTIN and JEFF DICKE*
Washington University, Pediatric Urology, Saint Louis, USA -
* Washington University, OBGYN, Saint Louis, USA

#-52 (SO)

Prenatal ultrasound has led to earlier detection and repair of ureteropelvic junction obstruction

BARRY KOGAN, SETH CAPELLO, RONALD KAUFMAN, JR. and LOUIS GIORGI, JR.

Albany Medical Center, Urology, Albany, USA

#-53 (PWP)

Conservative treatment of pelvi-ureteric junction obstruction in children with antenatal diagnosis of hydronephrosis: lessons learned after 16 years of follow up

BORIS CHERTIN, AVNER POLLACK, DMITRY KOULIKOV, ALON FRIDMANS, RON RABINOWITZ*, IRIT HADAS-HALPERN† and AMICUR FARKAS

*Shaare Zedek MC, Urology, Jerusalem, ISRAEL - *Shaare Zedek MC, Obstetric Ultrasound Unit, Jerusalem, ISRAEL - †Shaare Zedek MC, Diagnostic Radiology, Jerusalem, ISRAEL*

#-54 (P)

Clinico-pathological correlations in congenital ureteropelvic junction obstruction (upjo)

CRAIG PETERS, JOSEPH BORER*, STUART BAUER*, DAVID DIAMOND* and SEYMOUR ROSEN†

*Childrens Hospital Boston, Urology, Boston, USA - *Childrens Hospital, Urology, Boston, USA - †Beth Israel Deaconess, Pathology, Boston, USA*

#-55 (SO)

The minimally invasive open pyeloplasty

JOB CHACKO, PETER FURNESS and MARTIN KOYLE

the children's hospital of denver, urology, Denver, USA

#-56 (SO)

Outpatient pediatric bladder and renal surgeries

D. PRESTON SMITH MD and MARY GJELLUM*

*University Pediatric Urology, Knoxville, USA - *Knoxville, USA*

#-57 (PWP)

A modified technique of ureteroplasty for megaureter in children

FRANCISCO OSSANDON, MARIA VICTORIA ROMANINI* and MICHELE TORRE†

*CALVO MACKENNA HOSPITAL UNIVERSITY OF CHILE, PEDIATRIC SURGERY, Santiago De Chile, CHILE - *LUIS CALVO MACKENNA HOSPITAL, PEDIATRIC SURGERY, Santiago De Chile, CHILE - †GIANNINA GASLINI INSTITUTE, PEDIATRIC SURGERY, Genova, ITALY*

17:00–17:45 **Lecture: Ureteral obstruction and renal function**
ERIK PERSSON

17:45–18:00 **Discussion**

Thursday, 16 June 2005

08:00–09:00

S07: Lower urinary tract

Chairs: U. Sillén, B. Kaplan

#-58 (P)

Acetylcholine in the presence of increased hydrostatic pressure is a mitogen for bladder smooth muscle cells

SANG DON LEE, MD, CEM AKBAL, MD* and MARTIN KAEFER†
Pusan National University Hospital & College of Medicine, Department of Urology, Busan, KOREA, REPUBLIC OF -

**Ankara, TURKEY - †Indiana university, dept. of Pediatric Urology, Indianapolis, USA*

#-59 (P)

The compensating fetal bladder: structure, compliance and contractility following eight days in-utero obstruction

MARIE-KLAIRE FARRUGIA, ADRIAN WOOLF*, MARGARET GODLEY*, DONALD PEEBLES†, CHRISTOPHER FRY‡ and PETER CUCKOW¶

*Institute of Child Health and Great Ormond Street Hospital, Nephro-Urology Unit, London, UNITED KINGDOM - *Institute of Child Health, Nephro-urology Unit, London, UNITED KINGDOM - †University College Hospital, Fetal Medicine, London, UNITED KINGDOM - ‡Institute of Urology and Nephrology, Physiology, London, UNITED KINGDOM - ¶Institute of Child Health and Great Ormond Street Hospital, Nephro-urology, London, UNITED KINGDOM*

#-60 (PWP)

The use of perineal urethroplasty for bulbar and membranous urethral strictures in children and adolescents

EZEKIEL LANDAU, OFER SHENFELD, JOSHUA GDOR and DOV PODE

Hadassah Hebrew University Medical Center, Urology, Jerusalem, ISRAEL

#-61 (LO)

Posterior urethral valves: the correlation of renal status and GFR at 16 months with bladder function, urinary incontinence and GFR at 5 years of age

DIVYESH DESAI, MARGARET GODLEY* and PATRICK DUFFY†
*Institute of Child Health and Great Ormond Street Hospital for Children, NHS Trust, Nephro-urology, London, UNITED KINGDOM - *Institute of Child Health, University College London, Nephro-urology, London, UNITED KINGDOM - †Great Ormond Street Hospital for Children, NHS Trust, Nephro-Urology, London, UNITED KINGDOM*

#-62 (SO)

Boys with posterior urethral valves, outcome concerning renal function, bladder function and paternity after 31-44 years

GUNDELA HOLMDAHL and ULLA SILLÉN*
*queen silvia children's hospital, pediatric urology, Göteborg, SWEDEN - *Queen Silvia Childrens Hospital, Pediatric Urology, Göteborg, SWEDEN*

#-63 (SO)

Efficacy of ddavp treatment in posterior urethral valve patients with polyuria

AYKUT KEFI, SERKAN DOGAN*, BULENT AKDOGAN*, BERK BURGU*, SOHRAB NAGHIZAD† and SERDAR TEKUL†
*D.E.U.T.F., Urology, Izmir, TURKEY - *Hacettepe University Medical Faculty, Urology, Ankara, TURKEY - †Hacettepe University, Medical Faculty, Urology, Ankara, TURKEY*

#-64 (SO)

The effect of continuous overnight mitrofanoff drainage in the un-augmented valve bladder

MIKE O'BRIEN, MARK WOODWARD, KHALID SHARIF, HARISH CHANDRAN and KARAN PARASHAR
Birmingham Children's Hospital, Paediatric Urology, Birmingham, UNITED KINGDOM

#-65 (PWP)

A case series of nephrogenic adenoma of the bladder and urethra

TIM CROOK, ZOE MEAD*, BHUMITA VADGAMA* and PADRAIG MALONE

Southampton University Hospital, Paediatric Urology, Southampton, UNITED KINGDOM - * Southampton University Hospital, Pathology, Southampton, UNITED KINGDOM

#-66 (LO)

Klippel-Trenaunay syndrome: treatment of genitourinary sequelae

DOUGLAS HUSMANN, SUE RATHBUN and DAVID DRISCOL*
Mayo Clinic, Urology, Rochester, USA - * Mayo Clinic, cardiology, Rochester, USA

#-67 (V)

The Monfort technique for abdominal wall reconstruction, orchidopexy and elective appendicovesicostomy in the management of the prune-belly syndrome

ANTONIO MACEDO JR., RIBERTO LIGUORI, ITAMAR GONÇALVES, YURI NOBRE, GILMAR GARRONE, MAURICIO HACHUL, VALDEMAR ORTIZ and MIGUEL SROUGI

Federal University of Sao Paulo, Urology, Sao Paulo, BRAZIL

09:00–09:30

S08: Oncology

Chairs: W. Rösch, M. Ritchey

#-68 (P)

Expression of COX-2 in Wilms' tumor: immunohistochemical study using TMA methodology

YORAM MOR, EDI FRIDMAN*, JONATHAN PINTHUS, YURI KOPOLOVIC*, JACOB RAMON and ORNA MOR†
Chaim Sheba Medical Center, Urology, Ramat-gan, ISRAEL - * Chaim Sheba Medical Center, Pathology, Ramat Gan, ISRAEL - † QBI Enterprises Ltd., Ness Ziona, ISRAEL

#-69 (P)

Myogenin and desmin immunohistochemistry in the assessment of postchemotherapy genitourinary embryonal rhabdomyosarcoma: prognostic and management implications

PRASAD GODBOLE, ALICE OUTRAM*, DUNCAN WILCOX†, PATRICK DUFFY† and NEIL SEBIRE‡
Great Ormond Street Hospi, Paediatric Urology, London, UNITED KINGDOM - * Great Ormond Street Hospital, Urology, London, UNITED KINGDOM - † Great Ormond Street Hospital, Paediatric Urology, London, UNITED KINGDOM - ‡ Great Ormond Street Hospital, Histopathology, London, UNITED KINGDOM

#-70 (SO)

Does the less aggressive multimodal approach of bladder-prostate rhabdomyosarcoma preserve bladder function?

ROBERTO SOLER, ANTONIO MACEDO, HOMERO BRUSCHINI, FABIOLA PUTY*, ELIANA CARAN*, ANTONIO PETRILLI†, GILMAR GARRONE, VALDEMAR ORTIZ and MIGUEL SROUGI
Pediatric Oncology Institute - Paulista School of Medicine, Urology, São Paulo, BRAZIL - * Pediatric Oncology Institute - Paulista School of Medicine, Pediatric Oncology, São Paulo, BRAZIL - † Pediatric Oncology Institute - Paulista School of Medicine, Paediatric Oncology, São Paulo, BRAZIL

#-71 (SO)

Laparoscopic nephrectomy for Wilms' tumor after chemotherapy: initial experience

FRANCISCO DÉNES, RICARDO DUARTE*, VICENTE ODOE FILHO† and LILIAN CRISTOFANI†

São Paulo University, Urology, São Paulo, BRAZIL - * São Paulo State University, Urology, São Paulo, BRAZIL - † São Paulo State University, Pediatrics, S, BRAZIL

#-72 (V)

Excision of intracaval Wilms' tumor on cardiopulmonary bypass

GEORGE HALEBLIAN, MARTIN ELLIOTT*, ZEESHAN ASLAM†, ERGIN KOCYILDIRIM*, PATRICK DUFFY†, PETER CUCKOW† and DUNCAN WILCOX†

University of Massachusetts, Urology, Worcester, USA - * Great Ormond Street Hospital for Sick Children, Cardiac Surgery, London, UNITED KINGDOM - † Great Ormond Street Hospital for Sick Children, Paediatric Urology, London, UNITED KINGDOM

09:30–10:30

S09: Imaging

Chairs: E. Stokeland, E. Kass

#-73 (P)

The renal mass index: an objective method of diagnosing hydronephrosis to supplement or replace grading

STEPHEN SHAPIRO, MICHAEL J. SILBERSTEIN*, GEORGE STEINHARDT†, ATCHAWEE LUISIRI‡ and ED WAHL¶
Ped.Urol.Med.Grp.,Inc., Pediatric Urology, Sacramento, USA - * Sutter Memorial Hospital, Radiology, Sacramento, USA - † Pediatric Urology, Urology, Grand Rapids, USA - ‡ Glennon Children's Hospital, Radiology, St. Louis, USA - ¶ Wahl Co., Santa Monica, USA

#-74 (LO)

BOLD MRI: a non-invasive technique for tissue pO₂ assessment applied to the obstructed kidney

THOMAS DISSING, MICHAEL PEDERSEN, JAN MØRKENBORG, HANS STØDKILDE JØRGENSEN and JØRGEN FROKIAER
University of Aarhus, Clinical Institute, Aarhus, DENMARK

#-75 (LO)

Magnetic resonance imaging in evaluating outcomes of pediatric pyeloplasty

ANDREW KIRSCH, LEAH MCMANN, J. DAMIAN GRATTAN-SMITH*, RICHARD JONES†, EDWIN SMITH and HAL SCHERZ
Emory University School of Medicine, Pediatric Urology, Atlanta, USA - * Emory University School of Medicine, Pediatric Radiology, Atlanta, USA - † Childrens Healthcare of Atlanta, Pediatric Radiology, Atlanta, USA

#-76 (P)

Preliminary study of the predictive value of MRI for histological lesions in severe obstructive uropathy

ALAA EL-GHONEIMI, ELIANE RAHAL*, SOPHIE DORGERET†, DOMINIQUE BERRIBI‡, MICHEL PEUCHMAUR‡, GUY SEBAG† and YVES AIGRAIN
Hôpital Robert Debré, AP-HP, Université Paris VII, Pediatric Surgery and Urology, EA3102, Paris, FRANCE - * Hôpital Robert Debré, AP-HP, Université Paris VII, Pediatric Surgery and Urology, Paris, FRANCE - † Hôpital Robert Debré, AP-HP, Université Paris VII, Pediatric Radiology, Paris, FRANCE - ‡ Hôpital Robert Debré, AP-HP, Université Paris VII, Pathology, EA3102, Paris, FRANCE

#-77 (PWP)

Functional and morphological evaluation of antenatally detected urinary tract dilatation with dynamic magnetic resonance urography

TIMO HURME, MIKKO REUNANEN and ERKKI SVEDSTRÖM*
University of Turku, Department of Pediatric Surgery, Turku, FINLAND - * University of Turku, Department of Diagnostic Radiology, Turku, FINLAND

#-78 (SO)

The role of renal resistive index measures in the diagnostic work-up of congenital hydronephrosis

YAZAN F. RAWASHDEH, ARNE HØRLYCK*, JENS MORTENSEN, JØRGEN FROKIAER† and JENS CHR. DJURHUUS

Aarhus University, Clinical Institute, Aarhus, DENMARK -

** Aarhus University Hospital - Skejby, Radiology, Aarhus, DENMARK - † Aarhus University Hospital - Skejby, Clinical Physiology, Aarhus, DENMARK*

#-79 (P)

Correlation between ultrasound bladder measurements and urodynamic findings in children with urinary tract infection

BIJI SREEDHAR, CHUNG KWONG YEUNG*, YEE FONG LEUNG†, FRANCES KAM YEE SIT* and CONSTANTINE METRIWELI†

Chinese University of Hong Kong, Surgery, Shatin, CHINA -

** Chinese University of Hong Kong, Surgery, Kowloon, CHINA -*

† Chinese University of Hong Kong, Radiology and Organ imaging, Kowloon, CHINA

#-80 (PWP)

Development of an examination chair for ultrasound of the kidneys and bladder

LUTZ WUENSCH, FRITZ KAHL and LUCAS WESSEL

University of Lübeck, Pediatric Surgery, Lübeck, GERMANY

#-82 (SO)

Ultrasound imaging of the sacral reflexes

TOM DE JONG, MARIANNE VIJVERBERG, PIETER DIK,

LAETITIA DE KORT and AART KLIJN

Wilhelmina Children's Hospital, pediatric urology, Utrecht, NETHERLANDS

#-83 (PWP)

Real-time three-dimensional (4d) ultrasound imaging of the clitoris

NAOMI CROUCH, JING DENG*, A LINNEY†, A TODD-POKROPEK‡, CHARLES RODECK* and SARAH CREIGHTON‡

*Elizabeth Garrett Anderson Hospital, Obstetrics and Gynaecology, London, UNITED KINGDOM - * University College London, Obstetrics and Gynaecology, London, UNITED KINGDOM - † University College London, Medical Physics, London, UNITED KINGDOM - ‡ Elizabeth Garrett Anderson Hospital, Gynaecology, London, UNITED KINGDOM*

#-84 (SO)

Scrotal ultrasound more accurately predicts testicular growth asymmetry than prader orchidometer in adolescent scrotal varicocele

DANIEL HERZ and BENJAMIN DILLON*

*Mount Sinai School of Medicine, Division of Pediatric Urology, New York, USA - * Mount Sinai School of Medicine, Department of Urology, New York, USA*

10:30–11:00 Coffee break and poster viewing

11:00–12:00 **Panel: Imaging in pediatric urology**

GIL RUSHTON, ANDREW KIRSCH, EIRA STOKLAND

Chair: David Thomas

12:00–12:45 **John Duckett Lecture**

MICHAEL MITCHELL

12:00–14:15 Lunch

14:15–15:05

S10: Exstrophy-epispadias complex 1

Chairs: P. Duffy, A. Khoury

#-85 (LO)

Quality of life in adult women born with bladder and cloacal exstrophy : a long term follow-up

MASSIMO CATTI and PIERRE MOURIQUAND

hopital debrousse, urologie pediatrique, Lyon, FRANCE

#-86 (SO)

Quality of life and pelvic floor function in bladder exstrophy patients with ureterosigmoidostomy

JENNIFER MILES-THOMAS, AMANDA MCINTYRE*,

SUSAN GEARHART* and JOHN GEARHART†

*Johns Hopkins University, Urology, Baltimore, USA - * Johns*

Hopkins, Surgery, Baltimore, USA - † Johns Hopkins, Urology, Baltimore, USA

#-87 (LO)

Long term follow up of 100 cases of bladder exstrophy: is uretero-sigmoidostomy outdated in a developing country ?

HICHAM SIBAI, MOUNIA ALZEMMOURI*, MOHAMED YAAKOUBI* and MOHAMED FEHRI*

*Averroes University health center Casablanca, Morocco, Pediatric Surgery, Casablanca, MOROCCO - * Averroes university health center, pediatric surgery, Casablanca, MOROCCO*

#-88 (SO)

Bladder exstrophy: reconstructed female patients achieving normal pregnancy and delivering normal babies

MARCOS G MACHADO, AMILCAR M GIRON, FRANCISCO T DENES, FREDERICO A Q SILVA, SAMI ARAP and ANTONIO M LUCON

University of São Paulo, Urology, São Paulo, BRAZIL

#-89 (P)

Prevention and treatment of uterine prolapse in exstrophy girls with rotundum- psoas-hitch procedure: a new surgical technique

THOMAS BOEMERS, CHRISTA SCHIMKE*, BARBARA

LUDWIKOWSKI* and MIRCIÀ-AUREL ARDELEAN*

*Salzburger Landeskliniken, Paracelsus Medical University, Pediatric Surgery and Pediatric Urology, Salzburg, AUSTRIA - * SALK, Salzburg, AUSTRIA*

#-90 (SO)

Gait analysis in children with bladder exstrophy: effects of an early pelvic osteotomy

ANNA SVENNINGSSON, ELENA GUTIERREZ-FAREWIK,

JAN SVENSSON, EVA BROSTROEM, YVONNE HAGLUND and

AGNETA NORDENSKJÖLD*

*Karolinska institutet, Dept of Women and Child Health, Stockholm, SWEDEN - * Pediatric Surgery, Dept of Women and Child Health, Karolinska Institutet, Stockholm, SWEDEN*

#-91 (PWP)

Impact of epispadias repair on bladder capacity in boys with classic bladder exstrophy

MARCUS KUFNER, RANJIV MATHEWS* and JOHN GEARHART

Johns Hopkins School of Medicine, Urology, Baltimore, USA -

** The Johns Hopkins School of Medicine, Urology, Baltimore, USA*

15:05–15:30

S11: Endourology / Laparoscopy 1

Chairs: A. El-Ghoneimi, C. Peters

#-92 (P)

Robotically assisted laparoscopic antireflux surgery in children

CRAIG PETERS and JOSEPH BORER*

*Childrens Hospital Boston, Urology, Boston, USA - * Childrens Hospital, Urology, Boston, USA*

#-93 (PWP)

Pediatric laparoscopic pyeloplasty using robotic assistance

CRAIG PETERS, STUART BAUER*, BARTLEY CILENTO* and JOSEPH BORER*

*Childrens Hospital Boston, Urology, Boston, USA - * Childrens Hospital, Urology, Boston, USA*

#-94 (SO)

Robotically assisted retroperitoneoscopic pyeloplasty: mid-term of 50 cases with the da vinci surgical system®

LARS HENNING OLSEN and TROELS MUNCH JOERGENSEN*

*Aarhus University Hospital- Skejby-, Urology - Division of Paediatric Urology, Aarhus, DENMARK - * Aarhus University Hospital-Skejby-, Urology, Division of Paediatric Urology, Aarhus, DENMARK*

#-95 (P)

Magnetic positioning system for trocarless laparoscopic instruments

LINDA BAKER, ROBERT EBERHART*, RAUL FERNANDEZ†, RICHARD BERGS† and JEFFREY CADEDDU
*University of Texas Southwestern Medical Center at Dallas, Urology, Dallas, USA - * University of Texas Southwestern Medical School at Dallas, GI/Endocrinology, Dallas, USA - † University of Texas at Arlington, Automation & Robotics Research Institute, Fort Worth, USA*

#-96 (PWP)

Anterolateral approach for retroperitoneoscopic renal surgery

VENKATA JAYANTHI

Columbus Children's Hospital, Urology, Columbus, USA

#-97 (PWP)

Single laparoscopic port assisted insertion of peritoneal dialysis catheters in children

IRENE MILLIKEN, ARVIND NAGRA*, MAGGIE FITZPATRICK* and RAMNATH SUBRAMANIAM

*St James University Hospital, Dept Paediatric Urology, Leeds, UNITED KINGDOM - * St James University Hospital, Dept Paediatric Nephrology, Leeds, UNITED KINGDOM*

15:30–16:00 "Nobel Lecture" - Alfred Nobel, his relatives and the will
PETER NOBEL

16:30–17:15 Concert

19:00 Buffet

Friday, 17 June 2005

08:00–08:30

S12: Exstrophy-epispadias complex 2

Chairs: P. Caione, D. Canning

#-98 (P)

Oblique pelvic osteotomy in the exstrophy / epispadias complex

DAVID JONES and STEPHEN PARKINSON

Great Ormond Street Hospital for Children, Orthopaedics, London, UNITED KINGDOM

#-99 (PWP)

Repeat pelvic osteotomy in patients with prior failed closure of bladder exstrophy: applications and outcomes

JOHN GEARHART, CALEB NELSON, JEREMY KING* and PAUL SPONSELLER†

*Johns Hopkins Hospital, Brady Urological Institute, Baltimore, USA - * Johns Hopkins Hospital, Brady Urological Department, Baltimore, USA - † Johns Hopkins Hospital, Orthopedics, Baltimore, USA*

#-100 (PWP)

Pelvic reconstruction in bladder exstrophy

BERTIL ROMANUS

Orthopaedic Department, Göteborg, SWEDEN

#-101 (P)

Anterior perineal reconstruction in exstrophy-epispadias complex: outcomes

PAOLO CAIONE, NICOLA CAPOZZA*, DANIELA ZAVAGLIA* and MAURO DE DOMINICIS*

*Bambino Gesù Children's Hospital, Division Pediatric Urology - Dept. Nephrology-Urology -, Rome, ITALY - * Bambino Gesù Children's Hospital, Pediatric Urology, Roma, ITALY*

#-102 (PWP)

Surgical and functional results following epispadias repair with the Mitchell technique

GIOVANNA RICCIPIETTONI, GIOVANNI DI IORIO*, ANTONIO LA RICCIA† and CARMINE D'URZO‡

*Annunziata - Hospital-Cosenza (Italy), Pediatric Surgery, Cosenza, ITALY - * Annunziata - Hospital - Cosenza, Pediatric Surgery, Cosenza, ITALY - † Annunziata - Hospital- Cosenza, Pediatric Surgery, Cosenza, ITALY - ‡ Annunziata-Hospital-Cosenza, Pediatric Surgery, Cosenza, ITALY*

#-103 (V)

Radical soft tissue reconstruction for continence in bladder exstrophy (Kelly's operation)

JUSTIN H KELLY, PETER CUCKOW* and DIVYESH DESAI*

*Melbourne Children's Hospital & Great Ormond Street Hospital, London, Urology, Melbourne, AUSTRALIA - * Great Ormond Street Hospital, Urology, London, UNITED KINGDOM*

#-104 (P)

Continence following soft tissue reconstruction (Kelly's operation) in unselected cases of classic bladder exstrophy

PETER CUCKOW and DIVYESH DESAI*

*Great Ormond Street Hospital, Urology, London, UNITED KINGDOM - * Great Ormond Street, Urology, London, UNITED KINGDOM*

08:30–09:10

S13: Incontinence

Chairs: P. Hoebeke, S. Bauer

#-105 (P)

The use of bulking agents for continence in a difficult pediatric population

MARVALYN DECAMBRE, RICHARD GRADY, BYRON JOYNER and MICHAEL MITCHELL

Childrens Hospital and Regional Medical Center, Pediatric Urology, Seattle, USA

#-106 (P)

Antegrade and retrograde endoscopic Deflux bladder neck bulking in pediatric incontinence

GREGORY DEAN, ANDREW J. KIRSCH*, MICHAEL G. PACKER, HAL C. SCHERZ* and MARK R. ZAONTZ

*Temple University Children's Medical Center, Pediatric Urology, Philadelphia, USA - * Emory University School of Medicine, Atlanta, USA*

#-107 (SO)

Utility of dextranomer/hyaluronidase in the management of the exstrophy-epispadias complex

RANJIV MATHEWS, JANET GUCHAIT* and JOHN GEARHART
*The Johns Hopkins School of Medicine, Urology, Baltimore, USA - * Johns Hopkins Hospital, Nursing, Baltimore, USA*

#-108 (LO)

Long term effects of dextranomer endoscopic injections for treatment of urinary incontinence: an update of a prospective study of 61 patients

HENRI LOTTMANN, MARGAR MARGARYAN, STEPHEN LORTAT JACOB, MICHÈLE BERNUY* and GÖRAN LÄCKGREN†

*Hopital Necker-Enfants Malades, Pediatric surgery, Paris, FRANCE - * Fondation Ellen Poidatz, Urotherapy unit, Saint Fargeau Ponthierry, FRANCE - † University Children's Hospital, Section of Urology, Uppsala, SWEDEN*

#-109 (LO)

Extended experience with the use of botulinum toxin A in children with non neurogenic voiding dysfunction

PIET HOEBEKE, KAREL DECAESTECKER, PIETER VERLEYEN†, ANN RAES‡, JOKE DEHOORNE¶, JOHAN VANDE WALLE‡ and ERIK VAN LAECKE†

*Ghent University Hospital, Paediatric urology and urogenital reconstruction, Gent, BELGIUM - * Ghent University Hospital, Urology, Gent, BELGIUM - † Ghent University Hospital, Paediatric Urology, Gent, BELGIUM - ‡ Ghent University Hospital, Paediatric Nephrology, Gent, BELGIUM - ¶ Gh, Paediatric Nephrology, Gent, BELGIUM*

09:15–10:00

S14: Intersex 1

Chairs: M. B. Ostrowska, G. McLorie

#-110 (LO)

Outcome following vaginal reconstruction

BERK BURGÜ, PATRICK G DUFFY, PETER CUCKOW, PHILIP RANSLEY, IMRAN MUSHTAQ and DUNCAN T WILCOX
Great Ormond Street Children's Hospital NHS Trust and Guys Hospital, London, UK, Urology, London, UNITED KINGDOM

#-111 (LO)

Vaginal replacement in children and young adults – twenty years and counting

TERRY HENSLE, MD, RIDWAN SHABSIGH, MD, ELIZABETH REILEY, MD and HEINO MEYER-BAHLBURG, MD
Children's Hospital of New York, Department of Pediatric Urology, New York, USA

#-112 (PWP)

Complex vaginoplasty in young women

MELISSA DAVIES, CHRISTOPHER WOODHOUSE* and SARAH CREIGHTON

*University College London, Academic Department of Obstetrics & Gynaecology, London, UNITED KINGDOM - * University College London Hospitals, Institute of Urology & Nephrology, London, UNITED KINGDOM*

#-113 (SO)

Long-term-follow up study in CAH women; correlation to surgery

GUNDELA HOLMDAHL, AGNETA NORDENSKJÖLD*, LOUISE FRISÉN†, HELENA FILIPSSON‡, HENRIK FALHAMMAR¶, MARJA THORÉN¶, PER-OLOV JANSON§ and KERSTIN HAGENFELDT†

*Sahlgrenska University Hospital, Pediatric Surgery, Gothenburg, SWEDEN - * Pediatric Surgery, Dept of Women and Childs Health, Karolinska Institutet, Stockholm, SWEDEN - † Karolinska institutet, Dept of Molecular Medicine, Stockholm, SWEDEN - ‡ Sahlgrenska University Hospital, Endocrinology, Gothenburg, SWEDEN - ¶ Karolinska institutet, Endocrinology, Stockholm, SWEDEN - § Sahlgrenska University Hospital, Gynaecology, Gothenburg, SWEDEN - † Karolinska institutet, Gynaecology, Stockholm, SWEDEN*

#-114 (LO)

Genital sensation following childhood feminising genitoplasty

NAOMI CROUCH, CATHERINE MINTO*, LIH-MEI LIAO*, CHRISTOPHER WOODHOUSE† and SARAH CREIGHTON*
*London, UNITED KINGDOM - * Elizabeth Garrett Anderson Hospital, Gynaecology, London, UNITED KINGDOM - † The Middlesex Hospital, Institute of Urology, London, UNITED KINGDOM*

#-115 (SO)

Long-term-follow up study in CAH women; correlation to mutations

AGNETA NORDENSKJÖLD, LOUISE FRISÉN*, GUNDELA HOLMDAHL†, HELENA FILIPSSON‡, HENRIK FALHAMMAR¶, MARJA THORÉN¶, PER-OLOV JANSON§ and KERSTIN HAGENFELDT†

*Pediatric Surgery, Dept of Women and Childs Health, Karolinska Institutet, Stockholm, SWEDEN - * Karolinska institutet, Dept of Molecular Medicine, Stockholm, SWEDEN - † Sahlgrenska University Hospital, Pediatric Surgery, Gothenburg, SWEDEN - ‡ Sahlgrenska University Hospital, Endocrinology, Gothenburg, SWEDEN - ¶ Karolinska institutet, Endocrinology, Stockholm, SWEDEN - § Sahlgrenska University Hospital, Gynaecology, Gothenburg, SWEDEN - † Karolinska institutet, Gynaecology, Stockholm, SWEDEN*

10:00–10:30 Coffee break and poster viewing

10:30–11:00

S15: Dysfunctional voiding

Chairs: Tom de Jong, David Bloom

#-116 (P)

Correlating dysfunctional voiding symptom scores with uroflowmetry / electromyography patterns and post void residual urine volumes in children

DONALD BARTKOWSKI and RUSSELL DOUBRAVA
MICHIGAN STATE UNIVERSITY, OSTEOPATHIC SURGICAL SPECIALTIES, East Lansing, USA

#-117 (PWP)

Animated biofeedback yields similar but more rapid results than non-animated biofeedback

LANE PALMER
Schneider Children's Hospital, Pediatric Urology, Great Neck, USA

#-118 (SO)

High intensity, short term biofeedback in children with Hinman's syndrome

H. GIL RUSHTON, LUCIA COSTA MONTEIRO*, DORIS CARLSON and A. BARRY BELMAN
Children National Medical Center, Urology, Washington, USA - * Fundação Oswaldo Cruz, Pediatric Urodynamics, Rio De Janeiro, BRAZIL

#-119 (SO)

Botulinum A toxin urethral sphincter injection in children with non-neurogenic neurogenic bladder

IBRAHIM MOKHLESS, AKRAM ASSEM, KHALED FOUDA*, MOHAMED SHAFIK* and SALAH GAFAFAR*
Alexandria University, Pediatric Urology Section, Alexandria, EGYPT - * Alexandria University, Urology, Alexandria, EGYPT

#-120 (P)

Structural basis of voiding dysfunction in megacystis microcolon intestinal hypoperistalsis syndrome

UDO ROLLE and PREM PURI*
University of Leipzig, Department of Pediatric Surgery, Leipzig, GERMANY - * Children's Research Centre, Our Lady's Hospital for Sick Children, Dublin, IRELAND

11:00–11:40

S16: Nocturnal enuresis

Chairs: T. Neveus, M. Packer

#-121 (LO)

Sleep pattern and cortical arousal in enuretic children:

a comparison with non-enuretic normal children

CHUNG KWONG YEUNG, MEI DIAO, BIJI SREEDHAR*, KWOK WAH CROVER†, JENNIFER DART SIHOE, FRANCES KAM YEE SIT, WENDY FIONA BOWER and KWOK WAH WING

Chinese University of Hong Kong, Dept. of Surgery, Shatin, HONG KONG - * Chinese University of Hong Kong, Surgery, Shatin, CHINA - † Chinese University of Hong Kong, Psychiatry, Shatin, HONG KONG

#-122 (LO)

Brainstem and bladder dysfunctions in nocturnal enuresis

MEI DIAO, CUNG KWONG YEUNG, JENNIFER DART SIHOE, FRANCES KAM YEE SIT, WENDY FIONA BOWER, BIJI SREEDHAR* and YUN KWOK WING†

Chinese University of Hong Kong, Dept. of Surgery, Shatin, HONG KONG - * Chinese University of Hong Kong, Surgery,

Shatin, CHINA - † Chinese University of Hong Kong, Dept. of Psychiatry, Shatin, HONG KONG

#-123 (PWP)

Nocturnal enuresis in adolescents and adults is associated with childhood elimination symptoms

WENDY BOWER, FRANCES SIT* and C YEUNG
The Chinese University of Hong Kong, Surgery, Shatin, HONG KONG - * Prince of Wales Hospital, Surgery, Shatin, HONG KONG

#-124 (SO)

Association of elimination dysfunction and body mass index

ERIM ERDEM, ALPHA LIN* and BARRY KOGAN†
Mersin University School of Medicine, Urology, Mersin, TURKEY - * ACP, Research, Albany, USA - † AMC, Urology, Albany, USA

#-125 (SO)

Pharmacodynamic study using a new 'melt' formulation of desmopressin in children with PNE

JOHAN VANDE WALLE, GUY BOGAERT*, SVEN MATTSON†, THIERRY SCHURMANS‡, PIET HOEBEKE, VEERLE DEBOE¶ and JENS PETER NORGAAARD§
Universitaire Ziekenhuis Gent, Pediatric Nephrology, Gent, BELGIUM - * UZ Gasthuisberg, Pediatric Urology, Leuven, BELGIUM - † University of Linköping, Paediatrics, Linköping, SWEDEN - ‡ Hôpital Universitaire des Enfants Reine Fabiola, Pediatric Nephrology, Edegem/antwerpen, BELGIUM - ¶ Vrije Universiteit, Urology, Brussels, BELGIUM - § Ferring Pharmaceuticals, Urology, Copenhagen, DENMARK

#-126 (LO)

Prospective follow-up of efficiency and relapse rate of the treatment options for nocturnal enuresis: desmopressin + tolteridine and the full spectrum therapy

GUY BOGAERT, MARIJKE VAN KAMPEN*, HILDE LEMKENS*, ANNELEEN DESCAMPS*, TINNE DROSSAERT* and EMMANUEL AKINWUNTAN†
UZ Leuven, Pediatric Urology, Leuven, BELGIUM - * UZ Leuven, Fysiotherapy, Leuven, BELGIUM - † KUL, Statistics, Leuven, BELGIUM

11:40–12:15 ICCS Lecture

TRYEEVE NEVÉUS

Chair: CK Yeung

12:15–13:30 Lunch and poster viewing

13:30–14:15

S17: Vesicoureteral reflux 1

Chairs: D. Rohrman, M. Koyle

#-127 (P)

Urothelial differentiation in vesico ureteric reflux: implications for non-invasive screening

MARY GARTHWAITE, DAVID THOMAS*, RAMNATH SUBRAMANIAM†, JENS STAHLSCHEMIDT‡, IAN EARDLEY¶ and JENNIFER SOUTHGATE

University of York, Biology, York, UNITED KINGDOM - * St James's University Hospital, Paediatric Urology, Leeds, UNITED KINGDOM - † St James's University Hospital, Paediatric Urology, Leeds, UNITED KINGDOM - ‡ St James's, Pathology, Leeds, UNITED KINGDOM - ¶ St James's University Hospital, Urology, Leeds, UNITED KINGDOM

#-128 (LO)

Renal status as a predictor for spontaneous resolution of congenital high-grade infantile vesicoureteral reflux
SOFIA SJÖSTRÖM, ULLA SILLÉN*, ULF JODAL† and RUNE SIXT‡
Queen Silvia Children's Hospital, Urology Section / Dept of Pediatric Surgery, Göteborg, SWEDEN - * *Queen Silvia Children's Hospital, Pediatric Urology section, Göteborg, SWEDEN* - † *Queen Silvia Children's Hospital, Nephrology Section / Dept of Pediatrics, Göteborg, SWEDEN* - ‡ *Queen Silvia Children's Hospital, Dept of Clinical Physiology, Göteborg, SWEDEN*

#-129 (P)

Dimercaptosuccinic acid scan can predict clinically significant vesicoureteral reflux in infants with febrile urinary tract infection
DANIEL HERZ and JIMENA CUBILLOS*
Mount Sinai School of Medicine, Division of Pediatric Urology, New York, USA - * *Mount Sinai School of Medicine, Department of Urology, New York, USA*

#-130 (SO)

The impact of febrile status and dysfunctional elimination symptoms on the likelihood of finding vesicoureteral reflux (VUR)
STEVEN DOCIMO, JOHN COLEN*, KATE STANITSKI*, BARBARA WISE, PATRICIA BRANDT and HSI-YANG WU
University of Pittsburgh, Department of Urology, Pittsburgh, USA - * *University of Pittsburgh, School of Medicine, Pittsburgh, USA*

#-131 (P)

Familial vesico-ureteral reflux in Iceland
SIGGE BJÖRNSSON, ULLA SILLÉN*, A. HARALDSSON†, K. KRISTJANSSON‡ and K. STEFANSSON‡
Queen Silvia Children's Hospital, Urology Section/Dept of Ped Surgery, Göteborg, SWEDEN - * *Queen Silvia Children's Hospital, Pediatric Urology section, Göteborg, SWEDEN* - † *Landsþítalinn University Hospital, Department of Pediatrics, Reykjavik, ICELAND* - ‡ *deCODE Genetics, Reykjavik, ICELAND*

#-132 (SO)

Familial vesicoureteral reflux: influence of sex on prevalence
MARTINA PIRKER, MICHAEL DAWRANT, NOCHIPARAMBIL MOHANAN*, ERIC COLHOUN*, DAVID BARTON, ANDREW GREEN and PREM PURI
Children's Research Centre, Our Lady's Hospital for Sick Children, Dublin, IRELAND - * *National Children's Hospital, Dublin, IRELAND*

14:15–14:45

S18: Hypertension - renal transplantation

Chairs: P. Perreira-Lopez, D. Hatch

#-133 (P)

Unilateral partial ureteric obstruction causes hypertension in the rat
NILS WÄHLIN, A. ERIK G. PERSSON* and ARNE STENBERG
Pediatric urology, Pediatric surgery, Uppsala, SWEDEN - * *Biomedial Centre, Physiology, Uppsala, SWEDEN*

#-134 (SO)

Kidney transplantation in small patients with live related donors: 20 years of experience
EDUARDO RUIZ, JAVIER ESCALANTE CATERIANO*, FRANCISCO DE BADIOLA†, LOBOS PABLO‡, JUAN MOLDES, MARCELO BOER‡ and JUAN PUIGDEVALL‡

HOSPITAL ITALIANO DE BSAS, PEDIATRIC UROLOGY, San Andres, ARGENTINA - * *Hospital Italiano de Bs.As., Pediatric Urology, Bsas, ARGENTINA* - † *Hospital Italiano de Bs.As, Pediatric Urology, Bsas, ARGENTINA* - ‡ *Hospital Italiano de BsAs, Pediatric Surgery, Bsas, ARGENTINA*

#-135 (P)

Double renal transplantation — a strategy with under 3 year old donors
PEDRO LOPEZ-PEREIRA, M^a JOSE MARTINEZ-URRUTIA, ROBERTO LOBATO, JOSE ENCINAS*, CARMEN GARCIA MESEGUER* and ENRIQUE JAUREGUIZAR MONEREO
UNIVERSITY HOSPITAL LA PAZ, Pediatric Urology, Madrid, SPAIN - * *UNIVERSITY HOSPITAL LA PAZ, Pediatric Nephrology, Madrid, SPAIN*

#-136 (V)

Bilateral laparoscopic nephrectomy with simultaneous peritoneal dialysis catheter implantation
M^A JOSE MARTINEZ URRUTIA, PEDRO OLIVARES, PEDRO LOPEZ PEREIRA, ROBERTO LOBATO, ANGEL ALONSO* and ENRIQUE JAUREGUIZAR
UNIVERSITY HOSPITAL LA PAZ, PEDIATRIC UROLOGY, Madrid, SPAIN - * *UNIVERSITY HOSPITAL LA PAZ, Pediatric Nephrology, Madrid, SPAIN*

14:45–15:15

S19: Stones

Chairs: H. Lottmann, A. Caldamone

#-137 (P)

Diagnosis of pediatric urolithiasis: role of ultrasonography and CT scan
JEFFREY PALMER, ERIN DONAHER*, MARY ANN O'RIORDAN* and KATHERINE MACRAE DELL*
Rainbow Babies and Children's Hospital, Pediatric Urology, Cleveland, USA - * *Rainbow Babies and Children's Hospital, Pediatrics, Cleveland, USA*

#-138 (LO)

Pre and post treatment 99mTc-DMSA renal scan to evaluate potential long-term parenchymal damage following extra corporeal shock wave lithotripsy (eswl) monotherapy in 81 children
MARGAR MARGARYAN, FREDERIQUE ARCHAMBAUD*, A. RAMADAN* and HENRI LOTTMANN†
Paris, FRANCE - * *Hopital du Kremlin Bicêtre, Nuclear medicine, Le Kremlin Bicêtre, FRANCE* - † *Hôpital privé d'Antony, Pediatric urology unit, Antony, FRANCE*

#-139 (PWP)

Ureteroscopy in infants and young children: indications and outcomes
MICHAEL ERHARD
Nemours Children's Clinic, Urology, Jacksonville, USA

#-140 (SO)

Safety and outcome of rigid ureteroscopy for management of ureteral calculi in children
ASHRAF HAFEZ, AHMED EL-ASSMY, IBRAHIM ERAKY, AHMED EL-NAHAS and HAMDY EL-KAPPANY
Urology & Nephrology Center/Mansoura University, Urology, Mansoura, EGYPT

#-141 (SO)

Ureterscopy in children: is there a need for ureteral dilation and post-operative stenting?

C. D. ANTHONY HERNDON and DAVID B. JOSEPH
Alabama-Birmingham, Surgery/Urology, Birmingham, USA

#-142 (V)

Minimally invasive surgery and the management of urinary tract stone in children

JEAN-STEPHANE VALLA, CARPENTIER XAVIER, ZAVATE ANDREI and STEYAERT HENRI
fondation Lenval, pediatric surgery, Nice, FRANCE

15:15–15:30 **Coffee break**

15:30–15:55

S20: Endourology / Laparoscopy 2

Chairs: H. Olson, S. Docimo

#-143 (PWP)

Laparoscopic dye assisted lymphatic sparing varicocelectomy in adolescent boys

ANDRZEJ GOLEBIEWSKI, MAREK KROLAK and PIOTR CZAUDERNA
Medical University of Gdansk, Pediatric Surgery, Gdansk, POLAND

#-144 (PWP)

Pneumovesicoscopic ureteric reimplantation in children with vesicoureteral reflux and paraureteral (Hutch) diverticulum

HOLGER TILL, JENNIFER DART SIHOE, CHUNG KWONG YEUNG and KIN WAI CHAN
Chinese University of Hong Kong, Surgery, Shatin, CHINA

#-145 (SO)

Retroperitoneal laparoscopic nephrectomy in children: at last the gold standard?

HISHAM ABOU-HASHIM, ARNAULD BONNARD, HANI MORSI, OLIVIER HUOT*, MARIE-ALICE MACHER†, YVES AIGRAIN‡ and ALAA EL-GHONEIMI
*Hopital Robert Debré, AP-HP, University Paris VII, Pediatric Surgery and Urology, Paris, FRANCE - * Hopital Robert Debré, AP-HP, University Paris VII, Pediatric Anesthesia, Paris, FRANCE - † Hopital Robert Debré, AP-HP, University Paris VII, Pediatric Nephrology, Paris, FRANCE - ‡ Hopital Robert Debré, AP-HP, University Paris VII, Pediatric Urology and Surgery, Paris, FRANCE*

#-146 (PWP)

Laparoscopic transposition of lower pole vessels- the 'vascular hitch': an alternative for pelviureteric junction obstruction in children

PRASAD GODBOLE, DUNCAN WILCOX*, IMRAN MUSHTAQ* and PATRICK DUFFY*
*Great Ormond Street Hospi, Paediatric Urology, London, UNITED KINGDOM - * Great Ormond Street Hospital, Paediatric Urology, London, UNITED KINGDOM*

#-147 (V)

Laparoscopic transposition of lower pole vessels- the 'vascular hitch': an alternative for pelviureteric junction obstruction in children

PRASAD GODBOLE, DUNCAN WILCOX*, IMRAN MUSHTAQ* and PATRICK DUFFY*
*Great Ormond Street Hospi, Paediatric Urology, London, UNITED KINGDOM - * Great Ormond Street Hospital, Paediatric Urology, London, UNITED KINGDOM*

#-148 (V)

Horseshoe kidney and endoscopic surgery /retro or transperitoneal approach?

JEAN-STEPHANE VALLA, XAVIER CARPENTIER, ANDREI ZAVATE and HENRI STEYAERT
fondation Lenval, pediatric surgery, Nice, FRANCE

16:00–16:30 **AAP lecture: Hardy Hendren**
BARRY KOGAN

16:30–16:45 **Honorary Member: Gunnar Grotte**
ENRIQUE JAUREGIZAR
AAP Urology Medal 2004: Rudolf Hohenfellner
BARRY KOGAN

16:45–18:00 **ESPU GA**

19:30 **Gala Dinner**

Saturday, 18 June 2005

08:30–09:25

S21: Urinary Tract Infection

Chairs: G. Bogaert, L. Shortliffe

#-149 (P)

Is aerobic preputial flora age dependent?

CANAN ALDIRMAZ AGARTAN, DEMET A. KAYA*, AYNUR GULCAN* and TANJU AKTUG†
*AIBU Medicine School of Duzce, Department of Pediatric Surgery, Duzce, TURKEY - * AIBU Medicine School of Duzce, Department of Microbiology, Duzce, TURKEY - † Ankara University, Medicine School of Ankara, Department of Pediatric Surgery, Ankara, TURKEY*

#-150 (SO)

Phimosis treatment with topical steroids in 234 children: will the circumcision be coming to the end?

ANTONIO MACEDO, YURI NOBRE, RICARDO FREITAS, ITAMAR GONCALVES, GILMAR GARRONE, MAURICIO HACHUL, VALDEMAR ORTIZ and MIGUEL SROUGI
Hospital Beneficiencia Portuguesa, Urology, Sao Paulo, BRAZIL

#-151 (SO)

The long term results of topical application of a potent corticoid steroid cream for unretractable foreskin

CHRISTOPHE GHYSEL, KATHY VAN DER EECKT and GUY BOGAERT*
*UZ Gasthuisberg, Urology, Leuven, BELGIUM - * UZ Gasthuisberg, Pediatric Urology, Leuven, BELGIUM*

#-152 (LO)

Rapid species-specific detection of uropathogens using an electrochemical sensor array

BERNARD CHURCHILL, JOSEPH LIAO and DAVID HAAKE*
*University of California, Los Angeles, Urology, Los Angeles, USA - * University of California, Los Angeles, Medicine, Los Angeles, USA*

#-153 (P)

Suppression of renal scarring by gentamicin-loaded polybutylcyanoacrylate nanoparticles in ascending pyelonephritis in rats

RUSLAN BATRUTDINOV
Institute of Child Health, Children Hospital, Paediatric Urology, Moscow, RUSSIAN FEDERATION

#-154 (P)

Cranberry juice inhibits adherence of uropathogenic escherichia coli to primary cultured uroepithelium
RICHARD GRADY, ANN STAPLETON^{*}, AMY HOWELL[†] and CHERYL WOBBE[‡]
Children's Hospital, Urology, Seattle, USA - ^{*} *University of Washington, Infectious Disease, Seattle, USA* - [†] *Rutgers University, Chatsworth, USA* - [‡] *University of Washington, Microbiology, Seattle, USA*

#-155 (P)

Association between Interleukin-8 gene alleles and susceptibility to acute pyelonephritis
LUISA MURER, LINA ARTIFONI^{*}, WAIFRO RIGAMONTI[†], SONIA CENTI[‡], SUSANNA NEGRISOLO[¶], MANUELA DELLA VELLA[‡], GIOVANNI MONTINI[§], FRANCA ANGLANI[∇] and Graziella ZACCHELLO
Pediatric Nephrology Dialysis and Transplantation, Dep. Pediatrics University of Padova, Padova, ITALY - ^{*} *Laboratory of pediatric Nephrology, Department of Pediatrics-University of Padova, Padova, ITALY* - [†] *Institute of Urology, University of Padova, Padova, ITALY* - [‡] *Laboratory of Pediatric Nephrology, Dep. Pediatrics-University of Padova, Padova, ITALY* - [¶] *Laboratory of Pediatric Nephrology, Dep. Pediatrics-University of Padova, Padova, ITALY* - [§] *Pediatric Nephrology Dialysis and transplantation, Dep. Pediatrics-University of Padova, Padova, ITALY* - [∇] *Laboratory of renal Molecular Biology, University of Padova, Padova, ITALY* - *Pediatric Nephrology Dialysis and Transplantation, De. Pediatrics-University of Padova, Padova, ITALY*

09:25–10:10 **Lecture: Innate immunity and resistance to urinary tract infection**
CATHRINA SVANBORG

10:10–10:45 **Panel: Reflux and urinary tract infection**
ULF JODAL, JACK ELDER, PHILIP RANSLEY
Chair: Craig Peters

10:45–11:15 **Coffee break and poster viewing**

11:15–12:00

S22: Vesicoureteral reflux 2

Chairs: G. Läckgren, T. Hensle

#-156 (SO)

Intra- or extravesical ureteral reimplantation for unilateral vesicoureteral reflux in children? a prospective randomized study
CHRISTIAN SCHWENTNER, JOSEF OSWALD, ANDREAS LUNACEK, BARBARA SCHLENCK, GEORG BARTSCH^{*}, MARTINA DEIBL[†] and CHRISTIAN RADMAYR
Medical University Innsbruck, Pediatric Urology, Innsbruck, AUSTRIA - ^{*} *Medical University Innsbruck, Urology, Innsbruck, AUSTRIA* - [†] *Medical University Innsbruck, Biostatistics, Innsbruck, AUSTRIA*

#-157 (SO)

Bilateral extravesical ureteral reimplantation in toilet-trained children: is one-day hospitalization without urinary retention possible?
JEFFREY PALMER
Rainbow Babies and Children's Hospital, Pediatric Urology, Cleveland, USA

#-158 (PWP)

Adventitial-sparing ureteral tailoring; an alternative to existing techniques
ANTHONY BALCOM, CHARLES DURKEE and HRAIR MESROBIAN
Medical College of Wisconsin, Pediatric Urology, Milwaukee, USA

#-159 (PWP)

A comparison of single-dose caudal clonidine versus morphine in pediatric patients undergoing ureteral reimplantation
TYLER EMLEY, ANTHONY CASALE, RICHARD RINK, MARK CAIN, MARTIN KAEFER, KIRSTAN MELDRUM and THOMAS VETTER^{*}
Indiana University, Pediatric Urology, Indianapolis, USA - ^{*} *Indiana University, Pediatric Anesthesia, Indianapolis, USA*

#-160 (P)

A review of failures of endoscopic treatment of vesicoureteral reflux with dextranomer macrospheres
ANTHONY CALDAMONE, JAMES HIGHAM-KESSLER, WARREN SNODGRASS^{*}, MARTIN KOYLE[†], TERRY HENSLE[‡], RICHARD HURWITZ[¶], MARC CENDRON[§] and DAVID DIAMOND[§]
Rhode Island Hospital, Urology, Providence, USA - ^{*} *University of Texas Southwestern Medical Center at Dallas, Urology, Dallas, USA* - [†] *University of Colorado School of Medicine, Urology, Denver, USA* - [‡] *College of Physicians & Surgeons of Columbia University, Urology, New York, USA* - [¶] *Kaiser Permanente Medical Center, Urology, Los Angeles, USA* - [§] *Children's Hospital of Boston, Urology, Boston, USA*

#-161 (PWP)

The endoscopic treatment of vesico-ureteral reflux in challenging cases: the reimplanted ureter and the incised ureteroceles
SIMONA NAPPO, NICOLA CAPOZZA, GIUSEPPE COLLURA, ENNIO MATARAZZO and PAOLO CAIONE
Bambino Gesù Children's Hospital, Division of Pediatric Urology, Rome, ITALY

#-162 (P)

Cystoscopic findings after failed endoscopic treatment of VUR in children with bladder dysfunction
GILIAN BARKER, ARNE STENBERG^{*}, NILS WÄHLIN^{*} and GÖRAN LÄCKGREN[†]
Section of Urology, Dept. of Ped. Surgery, Uppsala, SWEDEN - ^{*} *Section of Urology, Dept. of Pediatric Surgery, Uppsala, SWEDEN* - [†] *Section of Urology, Dept. of Ped. Surgery, Uppsala, SWEDEN*

#-163 (LO)

The Swedish reflux study - an interim report
SVERKER HANSSON, ULLA SILLÉN, EIRA STOKLAND, RUNE SIXT and GÖRAN LÄCKGREN^{*}
The Queen Silvia Children's Hospital, PUNC, Göteborg, SWEDEN - ^{*} *Urology section, Pediatric Surgery, Uppsala, SWEDEN*

12:00–12:35

S23: Hypospadias 2

Chairs: G. Manzoni, B. Belman

#-164 (PWP)

An exact geometrical construction of the fossa navicularis: avoidance of meatal stenosis in Snodgrass hypospadias repair
DONALD NGUYEN
Dayton's Children's Medical Center, Pediatric Urology, Dayton, USA

#-165 removed

#-166 (PWP)

Onlay urethroplasty after sectioning of the urethral plate: the "three-in-one" technique for complex primary hypospadias

ANTONIO MACEDO JÚNIOR, RICARDO FREITAS, GILMAR GARRONE, SÉRGIO LEITE OTTONI, ITAMAR GONÇALVES, MAURÍCIO HACHUL, RIBERTO LIGUORI, VALDEMAR ORTIZ and MIGUEL SROUGI

*Federal University of São Paulo, Urology, São Paulo, BRAZIL - * Federal University of São Paulo, u, São Paulo, BRAZIL*

#-167 removed

#-168 (PWP)

Proximal hypospadias repair in 22 patients with meatal based paracoronar skin flap: the modified Koyanagi repair

RONEN RUB, STEPHEN LORTAT JACOB, CLAIRE NIHOUL FEKETE and HENRI LOTTMANN

Hopital Necker-Enfants Malades, Pediatric surgery, Paris, FRANCE

#-169 (PWP)

The tunica vaginalis dorsal graft urethroplasty : experimental study in rabbits

ANTONIO MACEDO JR., ADRIANO CALADO*, ROSANA DELCELO†, LUIZ POLI DE FIGUEIREDO‡, VALDEMAR ORTIZ and MIGUEL SROUGI

*Federal University of Sao Paulo, Urology, Sao Paulo, BRAZIL - * Federal University of São Paulo, Urology, Sao Paulo, BRAZIL - † Federal University of São Paulo, Pathology, São Paulo, BRAZIL - ‡ Federal University of São Paulo, Experimental Surgery, Sao Paulo, BRAZIL*

#-170 (V)

Dorsal tunica vaginalis graft to reconstruct the urethral plate for complex one-stage onlay urethroplasty

ANTONIO MACEDO JR, ADRIANO CALADO*, GILMAR GARRONE, MAURICIO HACHUL, RIBERTO LIGUORI, ITAMAR GONÇALVES, RICARDO FREITAS, VALDEMAR ORTIZ and MIGUEL SROUGI

*Federal University of Sao Paulo, Urology, Sao Paulo, BRAZIL - * Federal University of São Paulo, Urology, Sao Paulo, BRAZIL*

#-171 (SO)

Factors affecting outcome of tubularized incised plate urethroplasty (TIPU): single-center experience with 500 cases

ASHRAF HAFEZ, OSAMA SARHAN, MOHAMED T. EL-SHERBINY and MOHAMED S. DAWABA

Urology & Nephrology Center/Mansoura University, Urology, Mansoura, EGYPT

#-172 (SO)

Hypospadias repair with tubularised incised plate - is uroflowmetry necessary postoperatively?

GUNDELA HOLMDAHL, KATE ABRAHAMSSON*, MONIKA DOROSZKIEWICZ†, LENA KARSTRÖM‡ and ULLA SILLÉN*
*queen silvia children's hospital, pediatric urology, Göteborg, SWEDEN - * Queen Silvia Childrens Hospital, Pediatric Urology, Göteborg, SWEDEN - † Queen Silvia childrens hospital, Urotherapy, Göteborg, SWEDEN - ‡ Queen Silvia childrens hospital, pediatric surgery, Göteborg, SWEDEN*

#-173 (SO)

Is the impaired flow after hypospadias correction due to increased urethral stiffness?

KATJA WOLFFENBUTTEL, JOHAN PEL*, TIM IDZENG*, RON VAN MASTRIGT* and DIRK KOK
*Erasmusmc, Pediatric Urology, Rotterdam, NETHERLANDS - * Erasmusmc, Urology (furure), Rotterdam, NETHERLANDS*

#-174 (PWP)

Abnormal urine flow in boys (0-2 years) with distal hypospadias before and after correction

KATJA WOLFFENBUTTEL, MIEKE VAN DIJK*, NIELS WONDERGEM, BIBI PASSCHIER, JUDITH HOEFNAGELS, JUDITH HOEFNAGELS, GWENDOLYN DIELEMAN and DIRK KOK

*Erasmusmc, Pediatric Urology, Rotterdam, NETHERLANDS - * E, Pediatric Urology, Rotterdam, NETHERLANDS*

12:35–13:30 Lunch

13:30–14:30 **Panel: Future perspectives in pediatric urology**

TONY ATALA, ADRIAN WOLF, JEFF VALLA
Chair: Rick Rink

14:30–15:10

S24: Testis

Chairs: P. Androulakis, J. Barthold

#-175 (P)

Gene expression alterations in cryptorchid males using spermatozoal microarray analysis

MICHAEL NGUYEN, MICHAEL MORLEY*, KYLE WAGNER, DANIEL DELANEY and THOMAS KOLON

*The Children's Hospital of Philadelphia, Urology, Philadelphia, USA - * The Children's Hospital of Philadelphia, Pediatrics, Philadelphia, USA*

#-176 (P)

Cryopreservation of testicular biopsies from cryptorchid boys

KOLJA KVIST, JØRGEN THORUP, ANNE GRETE BYSKOV*, POUL ERIK HØYER† and CLAUS YDING ANDERSEN*

*Rigshospitalet, peadeatric surgery, Copenhagen, DENMARK - * Rigshospitalet, Laboratory of Reproductive Biology, Copenhagen, DENMARK - † University of Copenhagen, Medical Anatomy, Copenhagen, DENMARK*

#-177 (P)

Early successful orchidopexy does not prevent from developing azoospermia

FARUK HADZISELIMOVIC
Kindertagesklinik Liestal, Pediatric, Liestal, SWITZERLAND

#-178 (SO)

Surgical varix ligation improves occult sub-fertile semen paramters in adolescent asymptomatic varicoceles without testicular asymmetry

DANIEL HERZ and BENJAMIN DILLON*
*Mount Sinai School of Medicine, Division of Pediatric Urology, New York, USA - * Mount Sinai School of Medicine, Department of Urology, New York, USA*

#-179 (P)

Testicular microlithiasis: what does it mean clinically?

HAITHAM DAGASH and EWEN MACKINNON
Sheffield Children's Hospital, Paediatric Surgery, Sheffield, UNITED KINGDOM

#-180 (SO)

Inflammation of the testis and epidididymis in otherwise healthy child, is it a true bacterial urinary tract infection?

SAREL HALACHMI, AURORA TOUBI* and SHIMON MERETYK†
*Rambam Medical Center, Urology, Haifa, ISRAEL - * Bnai Zion M.C., Radiology, Haifa, ISRAEL - † Rambam M.C., Urology, Haifa, ISRAEL*

15:10–15:45

S25: Intersex 2

Chairs: P. Mouriquand, D. Husmann

#-181 (P)

Towards optimal gonadal diagnosis and treatment of children with dysgenetic gonads

KATJA WOLFFENBUTTEL, MARTINE COOLS^{*}, F HONECKER^{*}, HANS STOOP[†] and LEENDERT LOOIJENGA^{*}

*Erasmusmc, Sophia, Rotterdam, NETHERLANDS - *Erasmusmc, Pathology, Rotterdam, NETHERLANDS - † Erasmu, Pathology, Rotterdam, NETHERLANDS*

#-182 (P)

Partial urogenital mobilization: the advantages without the risks

RICHARD RINK, PETER METCALFE, MARK CAIN, MARTIN KAEFER, ANTHONY CASALE and KIRSTAN MELDRUM

Indiana University, Pediatric Urology, Indianapolis, USA

#-183 (P)

Musculocutaneous latissimus dorsi free transfer for total phalloplasty in children

SAVA PEROVIC and MIROSLAV DJORDJEVIC

University Children's Hospital, Urology, Belgrade, YUGOSLAVIA

#-184 (P)

Phalloplasty: best available treatment for 46 xy boys without penis

PIET HOEBEKE, ERIK VAN LAECKE^{*}, PETER CEULEMANS[†] and STAN MONSTREY[†]

*Ghent University Hospital, Paediatric urology and urogenital reconstruction, Gent, BELGIUM - * Ghent University Hospital, Paediatric urology and urogenital reconstruction, Gent, BELGIUM - † Ghent University Hospital, Plastic surgery, Gent, BELGIUM*

#-185 (P)

Phalloplasty and urethroplasty for preliminary reconstruction in infants with penile agenesis: two cases report

ROBERTO DE CASTRO, WAIFRO RIGAMONTI^{*} and FABIO ROSSI[†]
*Maggiore General Hospital, Paediatric Surgery, Bologna, ITALY - * Padua University, Urology, Padova, ITALY - † Ospedale Maggiore, Paediatric Surgery, Bologna, ITALY*

#-186 (PWP)

Developing a web-based clinical counseling tool about intersex conditions

SHELLEY WALL, DARIUS J. BAGLI^{*}, DIANE WHERRETT[†], MICHAEL J. WILEY[‡], BARBARA J. NEILSON[¶], GORDON TAIT and JODIE JENKINSON[§]

*The Hospital for Sick Children, Information Services, Toronto, CANADA - * The Hospital for Sick Children, Urology, Toronto, CANADA - † The Hospital for Sick Children, Endocrinology, Toronto, CANADA - ‡ University of Toronto, Surgery, Toronto, CANADA - ¶ The Hospital for Sick Children, Social Work/ Urology, Toronto, CANADA - § University of Toronto, Biomedical Communications, Toronto, CANADA*

15:45–16:15 Closing remarks, prizes and adjourn

Wednesday, 15 June 2005: 09:00–10:20

S01: Basic research 1

Chairs: D. Wilcox, L. Baskin

#-1 (P)

Muscle development of the fetal interureteric junction and the internal vesical sphincter

JOSEF OSWALD, ANDREAS LUNACEK, CHRISTIAN SCHWENTNER, GEORG BARTSCH*, HELGA FRITSCH† and CHRISTIAN RADMAYR

*Medical University Innsbruck, Pediatric Urology, Innsbruck, AUSTRIA - * Medical University Innsbruck, Urology, Innsbruck, AUSTRIA - † Medical University Innsbruck, Anatomy, Embryology, Histology, Innsbruck, AUSTRIA***PURPOSE**

The fetal development of the interureteric muscle, a precondition of a sufficient opposite anchoring of the vesico-ureteric junction (VUJ) and the muscle architecture of the bladder neck was investigated using immunohistochemical methods.

immunostaining of paraffin embedded material was used to demonstrate chronologic muscle development and arrangement. Morphological analysis was done using an Axiovision computer assisted light microscope coupled to an image digitalization and analysis system.

muscular layer corresponding to the cranial and dorsal part of the internal sphincter. Muscle fibres forming the musculus interuretericus were already demonstrable at 14 weeks of gestation.

MATERIAL AND METHODS

In 38 (16 female, 22 male) fetal specimens with a mean (range) gestational age of 16.4 (9-38) weeks the ureterotrigonal units were investigated. The histological studies were based on serial sections of the bladder base starting at the VUJ towards the posterior urethra. Anti-human α -smooth muscle actin

RESULTS

A much earlier developmental stage of the trigone muscle configuration in female and male fetuses was evaluated than reported so far. The condensation of myoblasts located mainly in the dorsal wall of the trigone as an extension of the ureteral muscle wall and at the bladder outlet was already present at 13 weeks of gestation. The trigone develops continuously and only as a single circular

CONCLUSIONS

There was a close connection between the trigonal smooth muscle layer emerging from the mesonephric ducts and the vesical sphincter forming the main part of the trigone by 13 weeks of gestation. The fetal development of the trigone, which consists only of a single ring-shaped muscular layer, forms a functional entity together with the musculus interuretericus, representing a precondition for a competent VUJ.

#-2 (P)

Growth curves of the fetal prostate in relation to gestational age and the maternal testosterone surge

ANDREAS LUNACEK, JOSEF OSWALD, CHRISTIAN SCHWENTNER, GEORG BARTSCH*, HELGA FRITSCH† and CHRISTIAN RADMAYR

*Medical University Innsbruck, Pediatric Urology, Innsbruck, AUSTRIA - * Medical University Innsbruck, Urology, Innsbruck, AUSTRIA - † Medical University Innsbruck, Anatomy, Embryology, Histology, Innsbruck, AUSTRIA***PURPOSE**

The objective was to create a nomogram of fetal prostate growth and to compare it with the testosterone levels during pregnancy in order to demonstrate a connection between the expansive growth of the fetal prostate and the maternal testosterone surge.

MATERIAL AND METHODS

A total of 17 fetal prostates between the 11th and 34th gestational week and 8 neonatal specimens between 5 and 13 months of age were analyzed. Paraffin embedded serial sections of whole prostates were immunostained for smooth muscle α -actin. Acquisition of planar

images was achieved by recording circumferential lines of single sections. Slices were examined using a computer assisted light microscope. After modular image acquisition the volumes were calculated using 3D reconstruction. The prostate volumes were correlated with gestational age and crown rump length. Volume statistics were further related to

reference testosterone levels during pregnancy.

RESULTS

Between the 11th and 34th week prostatic growth is exponential in relation to gestational age and crown rump length. The increasing volume of the prostate during the fetal period clearly parallels the gestational testosterone surge, particularly during the second and third trimester. The graphs of maternal testosterone levels and the prostate

volumes are virtually congruent. Between the 20th and 25th week of gestation a significant increase of the prostate volume as well as of the bladder neck in relation to the bladder size is observable. In the newborn a deceleration of prostatic growth corresponding to decreasing maternal testosterone levels is obvious.

CONCLUSIONS

Accelerated growth of the the fetal prostate originating from maternal testosterone stimulation was

demonstrated. In neonates a decrescence of this constant growth was noticed. The size ratio between the prostate volume and the fetal bladder resembles the proportion of these two organs in the elderly. This study may support the hypothesis of an intrauterine gender specific infravesical obstruction and high voiding pressures in male neonates.

#-3 (P)

Decreased fibronectin expression correlates with detrusor disorganisation in obstructed human fetal bladders

LIAM MCCARTHY, ADRIAN WOOLF and DUNCAN WILCOX*

*Institute of Child Health, Nephro-Urology, London, UNITED KINGDOM - * University of Texas, Department of Urology, Dallas, USA*

PURPOSE

Human fetal bladder outflow obstruction (BOO) is associated with bladder dysmorphogenesis and renal dysplasia; furthermore, in mice, fibronectin expression enhances detrusor smooth muscle maturation. We hypothesised that altered fibronectin expression may be implicated in human BOO detrusor smooth muscle pathology.

MATERIAL AND METHODS

Human fetal bladders were obtained from our institution, with ethical committee approval (03NU07). Eight male BOO fetuses were identified (prune belly syndrome and urethral atresia excluded), and compared to 6 male age-matched

'controls' from spontaneous abortions and stillbirths. Masson's trichrome was used to visualise detrusor smooth muscle histology; a detrusor muscle morphology score (1=normal to 3=bundles severely disrupted/absent) was generated by three blinded observers; renal dysplasia histology was also scored semiquantitatively. Immunohistochemistry was used to detect and quantify areas occupied by fibronectin. Statistical comparisons were by 2-tailed t-test for unequal variance.

RESULTS

Total wall thickness of obstructed fetal bladders was increased ($p < 0.01$), mainly due increased lamina propria thickness ($p < 0.05$). Obstructed detrusor smooth

muscle was dysmorphic (morphology score, $p < 0.05$). Detrusor fibronectin was reduced in BOO bladders (mean \pm SEM, $8 \pm 3\%$) versus controls ($16 \pm 2\%$, $p < 0.05$). Both the degrees of detrusor smooth muscle disruption and fibronectin downregulation correlated significantly with severity of renal dysplasia.

CONCLUSIONS

Human fetal BOO is associated with lamina propria thickening, detrusor smooth muscle dysmorphogenesis, and renal dysgenesis. We speculate that down-regulation of fibronectin, a key extracellular molecule involved in detrusor smooth muscle maturation in mice, may be functionally implicated in the failure of normal bladder myogenesis in human fetal BOO.

#-4 (P)

Fibronectin modulates fetal detrusor smooth muscle cell development mediated by integrin $\alpha 5 \beta 1$

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PURPOSE

Organogenesis is modulated by extracellular matrix and cell surface receptors. We hypothesized that fibronectin-integrin $\alpha 5 \beta 1$ interactions modulate fetal detrusor smooth muscle

cell (DSMC) growth. To test this we 1) used dissociated bladder cell suspensions to study adhesion to fibronectin; 2) demonstrated the effect of fibronectin on modifying proliferation in cell culture; and 3) determined whether RGD oligopeptides could perturb adhesion of DSMC.

MATERIAL AND METHODS

We used dissociated whole fetal mouse (embryonic day 18) bladders into single cell suspensions. We measured adhesion to fibronectin substrate, and characterised these adherent cells by

immunocytochemistry. Using the BrdU assay, proliferation was measured over 1 hour and 12 hours on fibronectin or glass, with or without serum. RGD oligopeptides were used to perturb adhesion and spreading of bladder cells.

RESULTS

With increasing fibronectin concentration more cells adhered ($p < 0.001$ ANOVA). Using immunocytochemistry, $79 \pm 12\%$ of

adherent cells were positive for integrin $\alpha 5$, $80 \pm 4\%$ for integrin $\beta 1$ and $82 \pm 2\%$ for desmin. After 12 hours $9 \pm 1\%$ of cells had incorporated BrdU when both fibronectin coated substrate and serum was used compared to less than 2% when not combined ($p < 0.001$ ANOVA). RGD oligopeptides (compared to RAD controls), reduced desmin positive cell adhesion ($n=6$, $p < 0.01$), and reduced cell spreading ($n=6$, $p < 0.001$).

CONCLUSIONS

Fetal DSMC adhere and spread to fibronectin. Fibronectin and serum are synergistic in inducing proliferation of these adherent fetal DSMC. RGD oligopeptides inhibit (partially) the adhesion and spreading of DSMC on fibronectin. During organogenesis fibronectin may modulate fetal DSMC proliferation mediated by integrin $\alpha 5\beta 1$.

#-5 (P)

Expression of 5alpha-reductase1 and 5alpha-reductase2 in human prostates during fetal development

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PURPOSE

Prostate development starts in the 10th week of gestation. From early stage, interactions between the epithelium and mesenchyme become established through a paracrine influence in response to testosterone. Testosterone stimulates epithelium to proliferate and differentiate resulting in regulating the differentiation of the stromal tissue. The transformation of testosterone to 5 alpha-dihydrotestosterone (DHT) by means of 5 alpha-reductase (5 α R) activity is a key reaction in androgen action. DHT mediates androgen effects in target tissues and is essential for both the formation of the male phenotype and androgen-mediated growth of the prostate, respectively. 5 α R2 is supposed to be the dominant isoenzyme in human accessory sex tissue whereas the function of 5 α R1 regarding prostate development

remains unclear. Our study focused on the detection, distribution, and effects of both isoenzymes during gestation.

MATERIAL AND METHODS

A total of 12 fetal prostates ranging from the 9th to 27th gestational week were analyzed. Paraffin embedded serial sections were immunostained for specific antibodies against 5 α R1 and 5 α R2. Staining was evaluated by assessing intensity, extension, and tissue distribution, respectively. Adult prostates, prepuces and colon epithelium were used as controls.

RESULTS

During the 9th gestational week positive staining was demonstrated as early as the

urogenital sinus could be identified with expression of both isoenzymes in epithelial tissue only. From the 11th week on both isoenzymes are detected in both, epithelial and stromal tissue. Cytoplasmatic intensity of staining with 5 α R1 antibodies varied throughout the gestational period with an additional nuclear staining. Conversely, 5 α R2 showed cytoplasmatic staining only, but 5 α R2 intensity was obviously higher than 5 α R1.

CONCLUSIONS

To our knowledge this is the first study showing the expression of both 5 α R1 and 5 α R2 in fetal prostates during gestation. Moreover, the time course and distribution of both isoenzymes is exposed.

#-6 (P)

Three-dimensional endothelialized autologous vesical graft constructed in a collagen sponge

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PURPOSE

In tissue engineering, great successes are known in cutaneous bioengineering, but in urology its use is still very limited. The

purpose of this study is to produce a vesical wall completely autologous by tissue engineering containing endothelial cells which will decrease the lapse of time needed for the vascularization of the graft.

MATERIAL AND METHODS

The small porcine bladder biopsy is dissociated into two separate layers from which urothelial or muscular and

endothelial cells are extracted. The cells are expanded in vitro and seeded onto a collagen matrix which supports the formation of a three-dimensional bladder wall. The urothelial cells, seeded on top of the collagen sponge, differentiate and ultimately form a vesical urothelium containing umbrella cells. The endothelial cells reorganize in the matrix to form a capillary-like network.

RESULTS

The in vitro engineered bladder wall is characterized by a differentiated urothelium which can be visualized by an indirect immunofluorescence assay for cytokeratins 8 and 18 staining. The presence of a homogeneous capillary-like network was identified by staining with an anti-PECAM-1 antibody.

CONCLUSIONS

We succeeded in obtaining a model of an endothelialized autologous bladder graft constructed by tissue engineering. This model seems promising in the field of vesical reconstruction by bioengineering. Stretch and permeability analyses on the tissue engineered bladder wall are presently in progress.

#-7 (P)

Molecular genetics of obstructive uropathy in the mouse

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PURPOSE

Renal dysplasia associated with lower urinary tract abnormalities accounts for nearly 40% of cases of pediatric end stage renal failure. However, the developmental pathways involved in urinary tract morphogenesis are not well understood. The purpose of this study is the characterization of a novel mouse mutation that results in congenital obstructive uropathy.

MATERIAL AND METHODS

The stubby mutation was generated by random insertion of a transgene that includes the tyrosinase cDNA and allows carrier identification by coat pigmentation. The site of transgene

integration was mapped by FISH and was identified inverse PCR. Urologic and skeletal phenotypes have been characterized by standard histological techniques.

RESULTS

Stubby homozygous mice have severe bilateral hydronephrosis, growth retardation and skeletal abnormalities. Renal histology demonstrated severe dilation of the pyelocalyceal system and the ureters, thinning of the renal medulla, vascular dilation and mesangial hypercellularity, but no significant interstitial injury and no apparent bladder involvement. Transgene insertion occurred in region E3.2 on chromosome 9. We have identified four candidate genes in

this region. Detailed analysis of the mutation will be presented.

CONCLUSIONS

Transgene insertion in stubby mice produced a recessive mutation in a gene essential for urologic development. We predict that one of the four candidate genes is required for proper distal ureteric maturation. Characterization of this gene or genes will contribute to the understanding of the molecular pathogenesis of congenital urinary tract obstruction. In addition the stubby model will be helpful in the analysis of the mechanisms of congenital obstructive nephropathy.

#-8 (P)

Platelet derived growth factor is increased after exposure to elevated hydrostatic pressure

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PURPOSE

Bladder outlet obstruction can lead to the deposition of extracellular matrix and a resultant decrease in bladder wall compliance. Platelet derived growth factor (PDGF) is a potent mitogen for fibroblasts and can increase the deposition of extracellular matrix. We studied the expression of PDGF-BB and its

receptor in bladder cells upon exposure to increased hydrostatic stress.

MATERIAL AND METHODS

Cultured human bladder fibroblasts and smooth muscle cells were exposed to pressures of 20 and 40 cm-H₂O for up to 72 hours. Western blot analyses and reverse transcription polymerase chain reaction

(RT-PCR) were performed to evaluate expression of both PDGF-BB and PDGF-BB Receptor (PDGF-BB R).

RESULTS

When human bladder fibroblasts were exposed to 40 cm-H₂O sustained hydrostatic pressure, both PDGF-BB and its receptor increased up to 22 fold and

8 fold respectively, while at 20 cm-H₂O the effect was minimal. Western blot analyses demonstrated that exposure of human bladder smooth muscle cells to a sustained hydrostatic pressure of 20 and 40 cm-H₂O for up to 72 hours did not alter expression of either PDGF-BB or its receptor.

CONCLUSIONS

Both PDGF-BB and PDGF-BB R are up-regulated human bladder fibroblasts in a time and pressure dependent fashion after as little as 24 hours exposure to pressure of ≤ 40 cm-H₂O. Our results

provide support for a potential role of both PDGF-BB and PDGF-BB R in bladder fibrosis secondary to increased intravesical pressure. Newer selective PDGF receptor antagonists may prove beneficial in preventing bladder wall fibrosis in patient with either anatomic or functional bladder outlet obstruction.

#-9 (P)

Inhibition of rho kinase increases compliance in murine whole bladders

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PURPOSE

To determine whether small GTPase Rho-activated kinase (Rho-kinase, ROK), a pathway shown to be involved in calcium sensitization of smooth muscle, plays a role in the compliance of normal murine whole bladders.

MATERIAL AND METHODS

Eight bladders were procured from adult female mice overdosed with isoflurane. The bladder necks were catheterized with 25 gauge needles and secured with 7-0 polyglactic acid sutures. The bladders were equilibrated at 37°C for 30 minutes in Tyrodes 1x baths with 20 micromolar Y-27632 (Calbiochem), an inhibitor of ROK activity, added to four

baths. Tyrodes 1x solution was infused into the bladders at 10 microliters per minute for 15 minutes. Transduced pressures were digitized using a commercial program (Dasylab). Bladder compliance was defined as change in microliters of volume over millimeters of mercury (ul/mmHg).

RESULTS

Bladders were subjected to Tyrodes 1x solution with or without Y-27632 which yielded mean compliances of 2.41 and 14.42 ul/mmHg ($p < 0.002$), respectively. A six-fold increase in compliance was obtained just from the addition of ROK inhibitor.

CONCLUSIONS

A significant increase in whole mouse bladder compliance is observed with the addition of ROK inhibitor. Deactivation of ROK-mediated calcium sensitization cascade prevents phosphorylation of myosin phosphatase, which is necessary for the inhibition of myosin phosphatase activity and maintaining the high level of phosphorylation of myosin regulatory light chain (MLC20). Disinhibited myosin phosphatase activity increases MLC20 dephosphorylation, suggesting a role for MLC20 phosphorylation in bladder compliance. The potential to manipulate bladder compliance through ROK inhibitors, or similar compounds, has interesting clinical ramifications justifying further studies.

#-10 (P)

Loss of interstitial cells of cajal and gap junction protein connexin 43 at the ureterovesical junction in children with vesicoureteral reflux

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PURPOSE

Intravesical ureteral endings were investigated by immunohistochemical methods to elucidate the presence of c-kit positive interstitial cells of Cajal (ICC's) as well as of the gap junction protein connexin 43 in children with vesicoureteral reflux.

MATERIAL AND METHODS

Samples of the distal intravesical part of the ureter were obtained from 27 ureterorenal units of children (median age 48 months) undergoing anti-reflux surgery. Routine histological paraffin embedded sections were immunostained for smooth muscle α -actin to assess general

morphology and architecture of the smooth muscle wrap. Indirect immunohistochemistry detecting the c-kit protooncogene was used to study the presence of ICC's. The gap junction density within the ureteral wall was determined applying connexin 43 immunostaining. Age matched non-refluxing ureteral endings (n=11) served as

controls. All investigations were done on the basis of high power field magnification for semiquantitative analysis. Statistical methods comprised Spearman's Rho correlation- test and the two- tailed Student's T- test. Statistical significance was assumed if $p < 0.05$.

RESULTS

ICC's were present in both refluxing and non-refluxing ureteral endings. Healthy individuals (mean: 14.7; SD+/- 1.87)

demonstrated significantly more ICC's than children with vesicoureteral reflux (mean: 4.2; SD+/- 1.56); $p < 0.0001$. Connexin 43 immunoreactivity was severely reduced in all refluxing ureteral specimens, while it was homogenously distributed in normal controls.

CONCLUSIONS

C-kit positive ICC's are severely reduced at the ureterovesical junction of children with reflux. A significant lack of these

pacemaker cells suggests an incompetent anti-reflux mechanism as well as dysmotility. A substantial reduction of gap junctions in the intravesical ureter adversely affects intercellular signalling. Consequently, coordinated ureteral peristalsis which is essential for a competent anti-reflux mechanism is deteriorated. Severe impairment of the signal transduction apparatus by diminished connexin 43 expression further aggravates the injured ureteral valve action.

#-11 (PWP)

High surviving expression in the ureteral wall of high degree vesicoureteral reflux in children

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PURPOSE

Survivin is a member of a protein family that suppresses apoptosis and regulates cell division. Survivin has not been described in normal differentiated tissues. CD 95 is a cell surface receptor, and it is believed to induce cell death in a variety of cells. The goal of this study is to evaluate the survivin and CD-95 expression in bladder and ureters of children operated for vesico-ureteral reflux (VUR).

MATERIAL AND METHODS

Sixteen paraffine embedded ureteral unit and anterior bladder wall of eleven children with mean age of 6.1 (range:1-13)

years with vesicoureteral reflux were stained immunohistochemically with Survivin and CD 95. At operation the distal margins of the ureters were sent to histologic examination and a full thickness biopsy from the anterior bladder wall including muscle and mucosa were performed. The sections were stained with the antibody in the routine method and the degree of staining was graded from 0-3, by a single uropathologist.

RESULTS

Immunohistochemistry staining with Survivin was positive in all ureters. We had 13 high grade (grade 3-5) and 3 low grade (grade 1-2) vesicoureteral reflux. The average survivin degree of staining in the

low grade reflux was 1.33 compared to 2.3 in the high grade refluxing ureters ($P = 0.019$). The average degree of staining was 1.2 in the bladder wall compared to 2.125 in the ureters. CD 95 stained mast cell only in ureters and bladder, without a descrimination related to the degree of reflux.

CONCLUSIONS

Positive staining of survivin was found in both ureters and urinary bladder of children that underwent surgical repair of vesicoureteral reflux. The degree of survivin staining was significantly higher in the high grade refluxing ureters comparing to low grade reflux and to the bladder wall in the same patients.

#-12 (P)

Morphology and apoptosis in the fetal kidney in ovine bladder outflow obstruction

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PURPOSE

Posterior urethral valves are the main cause of bladder outflow obstruction in the human fetus. Thirty percent of boys with

valves develop end-stage renal disease, despite intervention in the post-natal period. Would antenatal intervention help preserve renal function? To answer this question, the mechanisms of renal damage

in obstruction need to be elucidated. In an ovine model, we investigated histological changes at the onset of obstruction and the role of apoptosis in the kidney's response to obstruction.

MATERIAL AND METHODS

Thirty-three fetal lambs at day 70 gestation underwent surgical creation of bladder outflow obstruction. Twenty-nine fetal lambs underwent sham surgery. Fetal kidneys were collected 2, 5, 10, 20 and 30 days after surgery. Renal histology was examined. The renal expression of pro-apoptosis gene Bax and anti-apoptosis gene Bcl-X was investigated with real-time PCR. The TUNEL technique was used to assess regional renal apoptosis.

RESULTS

Renal morphological changes were observed after 2 days of obstruction. The ratio of expression of Bax to Bcl-X was increased with obstruction. Tubular apoptosis counts peaked after two days of obstruction. Blastemal apoptosis counts peaked after five days of obstruction.

CONCLUSIONS

Morphological changes are observed in the fetal kidney at the onset of bladder outflow obstruction. Obstruction increases the renal expression of Bax relative to Bcl-X. Tubular and blastemal apoptosis counts increase soon after obstruction. These findings suggest that damage to the developing fetal kidney begins to occur at the onset of obstruction. Renal preservation may best be achieved by early intervention.

#-13 (P)

Muscarinic receptor expression increases following exposure to elevated intravesical pressures

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PURPOSE

Bladder obstruction with high intravesical pressures can result in an increase in bladder wall thickness and decreased bladder wall compliance. We studied the effect of increased hydrostatic pressure on muscarinic (M) receptor expression in isolated human bladder smooth muscle cell (HBSMC) and in an in vivo model of acute bladder outlet obstruction.

MATERIAL AND METHODS

HBSMC were exposed to sustained levels of increased hydrostatic pressure. Expression of the M receptor subtypes M₂ and M₃ was studied using western blot.

Acute bladder outlet obstruction was maintained in five male pigs for 24 hours. Six normal animals served as controls. Following sacrifice, tissues were snap frozen and the expression of M₂ and M₃ receptor subtypes evaluated in a similar fashion as for the isolated cells.

RESULTS

M₂ and M₃ receptor protein levels increased in a time and pressure dependent manner (3.4 and 2 fold respectively) following exposure of HBSMC to elevated levels of hydrostatic pressure. Average detrusor pressure for the control animals during the 24 hour period was 3.1 cm-H₂O and average detrusor pressure for

the obstructed animals during the 24 hour period was 19 cm-H₂O. In vivo experiments demonstrated a similar response in that both M₂ and M₃ expression were markedly up-regulated when compared to controls (3 and 8 fold, respectively).

CONCLUSIONS

M₂ and M₃ receptors are up-regulated in a time and pressure dependent fashion after as little as 24 hours exposure to 20 cm-H₂O hydrostatic pressure. These alterations in M receptors in the acute period may significantly influence bladder contractility and frequency of uninhibited contractions.

#-14 (P)

Collagen prolyl 4-hydroxylase activity is upregulated in bladder outlet obstruction

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PURPOSE

The collagen prolyl 4 hydroxylase (P4H) plays a critical role in the synthesis of the

extracellular matrix. To study the alteration of P 4-H under the influence of variable hydrostatic pressures, we employed a novel pressure device to

expose human bladder smooth muscle cells (HBSMC) and fibroblast (HBF) to pressures in the physiologic range. Acute obstructed porcine bladder tissues were subsequently

evaluated to see if these changes were also seen with in vitro obstruction.

MATERIAL AND METHODS

HBSMC and HBF were exposed to pressures at 0, 20 and 40 cm.H₂O for up to 72 hours using a novel device that controls for hydrostatic pressure. In vivo studies were carried out using porcine bladder tissues including 6 normal (controls) and 5 obstructed bladders (obstructed group). Pigs were exposed to consistent

hydrostatic pressure of ? 20 cm for 24 hours after ligation of the urethra. To detect the molecular alteration of P4H, Western blot analysis and RT-PCR were performed.

RESULTS

On the Western blot, the exposure of both HBSMC and HBF to a sustained hydrostatic pressure resulted in the increased expression of P4H as a time and pressure dependent manner. In vivo, P4H expression was significantly increased in

the obstructed group compare to controls. On the RT-PCR, in both vitro and in vivo, the expression of P4H was markedly increased relative to controls ($p < 0.05$).

CONCLUSIONS

Up-regulated P4H in HBSMC, HFB and bladder in the acute period may significantly influence the synthesis of extracellular matrix, leading to the decreased compliance.

Wednesday, 15 June 2005: 10:40–12:00

S02: Basic research 2

Chairs: C. Radmayr, B. Kogan

#-15 (P)

Anorectal malformation in ephrin-b2lacZ/lacZ mutant mice

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PURPOSE

Knowledge of anorectal embryonic development is limited. The Eph family of receptor tyrosine kinases and their ligands, the ephrin family, mediate diverse cell-cell recognition events, including neuronal axon pathfinding, neural crest cells migration and vasculogenesis. Our group (Dravis et al, Dev Biol, 2004) reported that ephrin-B2^{lacZ/lacZ} mice manifest high imperforate anus in males and persistent cloaca in females. Ephrin-B2 is expressed in the developing urogenital sinus and hindgut epithelium. Other mutant mouse models, including mice null for the transcription factors Sonic Hedgehog (Shh) or Gli-3, also manifest ARM. In this study, we investigated whether altered ephrin-B2 signaling affects the protein expression of Shh or Gli-3 in the developing anorectum of our ephrin-B2^{lacZ/lacZ} mutant mice.

MATERIAL AND METHODS

Embryonic day 11.5 fetal mouse littermates were used. Wild type, heterozygous ephrin-B2^{lacZ/+}, and homozygous ephrin-B2^{lacZ/lacZ} mice were sexed, fixed in 4% paraformaldehyde, wax embedded, sectioned and mounted on slides. Immunohistochemistry for Shh and Gli-3 was performed with diaminobenzidine detection. Control sections were performed with no primary antibody.

RESULTS

In WT male mice, Shh and Gli-3 protein immunolocalizes to the epithelium of the anorectum. In WT mice, Gli-3 was most abundant within the epithelial edge of the urogenital sinus. In ephrin-B2^{lacZ/lacZ} male mice, septation did not occur and Shh

localization did not appear altered from WT controls. In contrast, Gli-3 appeared intensified in the epithelium of the fistulous connection of the anorectum with the urogenital sinus when compared to the WT controls.

CONCLUSIONS

During embryonic cloacal and hindgut development, Shh protein localizes normally while epithelial Gli-3 protein is moderately increased at the midline edge of the urorectal septum in ephrin-B2^{lacZ/lacZ} mutant mice. Further study of this novel model of anorectal malformation will deepen our understanding of the molecular basis of anorectal development.

#-16 (P)

Potassium channels regulate spontaneous activity in the neonatal rat bladder

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PURPOSE

Spontaneous activity in the rat bladder is high in neonates and decreases with

maturation. We proposed that this may be due to decreased cell-cell coupling by gap junctions (connexins) or increased depolarization by calcium-

activated potassium channels (SK and BK). Control of spontaneous activity may improve symptoms of bladder overactivity.

MATERIAL AND METHODS

Whole bladders from Sprague-Dawley rats were obtained at 3 days, 1, 2, 3, and 6 weeks and placed in an organ bath. After spontaneous activity was augmented by field stimulation, 10-7M apamin (SK blockade), 10-7M iberiotoxin (BK blockade), and 4x10-5M 12beta glycyrrhetic acid (gap junction blockade) were added to change the amplitude and frequency of spontaneous contractions. RNA was obtained at the

same time points and analyzed for SK, BK, connexin 26, 37, 43, and 45.

RESULTS

Spontaneous activity decreased between 1 and 6 weeks for iberiotoxin (41.3 to 12.1, $p=2 \times 10^{-4}$), glycyrrhetic acid (13.3. to 1.9, $p=1 \times 10^{-3}$), and apamin (11.8 to 3.7, $p=0.11$). BK RNA increased 3 fold from 3 days to 1 week ($p<0.01$) and remained elevated to 6 weeks ($p<0.05$). SK and

connexin RNA levels were stable. 3 day old bladders did not have spontaneous activity.

CONCLUSIONS

BK channels play the major role in regulation of spontaneous activity in the neonatal rat bladder. Pharmacologic manipulation of BK channels may be an alternate method of controlling bladder overactivity in the pediatric patient.

#-17 (P)

The contractile properties of detrusor smooth muscle in human bladder exstrophy

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PURPOSE

There is no information concerning the contractile properties of detrusor from exstrophic bladders and if any such changes contribute to altered bladder function. The aim of this study was to examine in vitro these contractile properties, and compare them to those of a paediatric population with normal bladder function.

were superfused with a buffered physiological solution. Nerve-mediated responses were elicited by electrical field stimulation. Agonist-induced responses were generated by carbachol and a,b methylene-ATP (ABMA). Significance of differences ($p<0.05$) between means were examined by Student's t-test.

a significantly greater proportion of total nerve-mediated responses in the normal group. The contractile responses to carbachol and ABMA were also significantly less in the exstrophy group.

RESULTS

Nerve-mediated contractions were significantly less in samples from patients with bladder exstrophy compared to control. The estimated maximal Tension (Tmax) of the force-frequency was significantly less in the exstrophy group ($n=18,13$ respectively). Atropine-resistant contractions were recorded in all preparations, but there were

CONCLUSIONS

The results show that contractile function is reduced in tissue samples from exstrophy patients, compared to those from normal bladders. The reductions in nerve-mediated and agonist-induced responses were similar and may argue against a denervation-induced dysfunction. Another hypothesis is that muscle tissue is replaced by extracellular matrix in exstrophy bladders to reduce contractility and this is currently being investigated.

#-18 (P)

Effects of endothelin-a-receptor antagonists on electrostimulation-induced bladder contractions in vivo

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PURPOSE

Anticholinergics are the gold standard in the treatment of bladder overactivity. Anticholinergics are not always able to suppress bladder instabilities sufficient, especially in neurogenic patients or in patients with spina bifida.

Endothelin (ET) is a strong constrictor of smooth muscle structures. The relevance of Endothelin-A receptors in the bladder was demonstrated in several in vitro studies. Aim of this functional study was to evaluate the effect of ET-A-antagonists on neurostimulation-induced bladder contractions in vivo.

MATERIAL AND METHODS

5 male mini pigs were anaesthetized. The ET-A-antagonist LU 302146 was administered i.v. in increasing concentrations. The bladder was exposed and a double lumen catheter was inserted to assess intravesical pressure (Pves)

measurements. Laminectomy was performed for sacral anterior root stimulation (SARS) of S2. The urethra was ligated to initiate isovolumetric bladder contractions during SARS. Pves was recorded before and after drug administration as well as before and during neurostimulation. At the end of each trial, a supplementary application of 2 mg atropine was administered and all parameters were re-evaluated.

RESULTS

In all experiments reproducible Pves values were elicited during electrostimulation before administration of the test substance. The ET-A-antagonist reduced stimulation-induced bladder contraction in average by 60%. Additional administration of atropine inhibited the detrusor contraction almost completely during neurostimulation.

CONCLUSIONS

1. ET-A antagonists could reduce neurostimulation-induced bladder contractions. 2. The tested ET-A antagonist and atropine might have synergistic effects since atropine resistancy in mini pigs is about 20%. 3. ET-A antagonists might play an important role in inhibition of atropine resistant bladder contraction, i.e. in children with spina bifida

#-19 (P)

The role of pax-2 in the apoptotic response of renal tubular epithelium following ureteral obstruction

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PURPOSE

Parenchymal loss in obstructive nephropathy develops through a process of apoptosis, tubular atrophy and interstitial fibrosis. We hypothesized that the anti-apoptotic function of Pax-2 should be partially protective against apoptosis in the obstructed kidney and consequently offer protection against secondary renal damage.

obstructed and contralateral unobstructed kidneys were removed. The temporal expression of Pax 2 was assessed by Western blotting. Levels of apoptosis were determined by the TUNEL assay and immunohistochemical staining for cleaved spectrin. Tubular atrophy was identified by PAS staining. Renal mass was compared using the ratio of kidney weight/body weight for each animal.

Apoptosis increased and peaked at day 10 then slightly decreased by day 15 of UUO in both groups. Apoptosis was significantly increased in the 1Neu animals at all time points following obstruction. This corresponded to a significant increase in tubular atrophy. Renal parenchymal loss was greater following obstruction in the Pax-2 deficient animals.

MATERIAL AND METHODS

Heterozygous Pax-2 mutant (1Neu) and WT (C3H) mice underwent unilateral ureteral obstruction (UUO). Animals were sacrificed on days 0, 5, 10 and 15 and the

RESULTS

Pax-2 protein expression fell to nearly undetectable levels in the first weeks of life. Re-expression of Pax-2 in response to UUO increased with the duration of obstruction and peaked at day 10.

CONCLUSIONS

Our data show increased apoptosis, tubular atrophy and parenchymal loss following unilateral ureteral obstruction (UUO) in Pax-2 deficient mice. This supports the partially protective function of Pax-2 in response to renal obstruction.

#-20 (P)

Matrix metalloproteinases (mmp) mediate hypoxia-induced erk1/2 mitogen activated protein kinase (mapk) activation and bladder smooth muscle cell (bsmc) growth

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PURPOSE

In vivo bladder wall thickening is often modeled by stretching bsmc in vitro. However, excessive stretch/tension on

a hollow organ wall in vivo also compresses the intramural microvasculature creating tissue hypoxia. We have already observed that stretch in vitro can activate several signaling cascades including

phosphorylation of erk1/2 MAPK. Here, we assess whether hypoxia alone is a sufficient condition for bsmc proliferation and the potential interaction of erk1/2 MAPK signaling and MMP activities in this response.

MATERIAL AND METHODS

Primary culture rat bsmcs were subjected to hypoxia: 3%O₂ (normoxia=20% O₂) for 10min, 20min or 30min. Phospho-erk1/2 levels were determined by western blot, normalized to actin. Thymidine proliferation assays were performed on bsmcs subjected to 18hr. or 24 hr. hypoxia (vs. time-matched normoxia controls). PD98059 (inhibitor of erk activation) and doxycycline (broad spectrum MMP inhibitor) were used to assess the requirement for erk1/2 activation and MMP activity on bsmc growth. N=3 for all experiments.

RESULTS

Hypoxia stimulated early bsmc phospho-erk1/2 expression with the strongest activation noted at 10 & 20 minutes. Pretreatment of bsmc with doxycycline significantly inhibited this rapid phospho-erk1/2 expression ($p < 0.0001$). 18hrs of hypoxia triggered significant bsmc proliferation, vs. 22 hrs of hypoxia or controls ($p < 0.0001$). Bsmcs pretreated at 10min or 20min with PD98059 or doxycycline significantly inhibited subsequent hypoxia-induced proliferation ($p < 0.03$; PD98059, $p < 0.05$; doxycycline).

CONCLUSIONS

These results suggest that hypoxia is a sufficient condition for bsmc proliferation in vitro, and that this response is mediated by signaling through erk MAPK. MMP activity appears to be required for the phospho-erk1/2-dependent hyperplasia triggered by hypoxia. Taken together, these in vitro observations support the theory that local hypoxia in vivo initiates discrete mechanisms regulating bladder wall hypertrophy under conditions of vascular compression typically induced by distention.

#-21 (P)

Increased expression of hepatocyte growth factor in fetal sheep kidney with obstructive nephropathy

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PURPOSE

The role of hepatocyte growth factor (HGF) in fetal urinary system diseases is unclear. The aim of this study was to investigate potential involvement of HGF in a fetal sheep model of partial ureteral obstruction and its possible relationship with TGF-beta1 and renal renin-angiotensin system (RAS).

MATERIAL AND METHODS

At 95 days gestation, bilateral PUO (BPUO) was created in 4 fetal sheep and unilateral PUO (UPUO) in 4 for 6 weeks; 3 age-matched (135 days gestation) served as controls. Total renal mRNA was probed for HGF, renin, angiotensinogen, type 1 and 2

angiotensin II receptors (AT-1 and AT-2) and transforming growth factor- beta1 (TGF-beta1) and assessed by semi-quantitative reverse transcription-polymerase chain reaction (RT-PCR).

RESULTS

All animals in BPUO group had moderate to severe hydronephrosis with enlarged kidneys while only 1 had so in UPUO group (mean weight 22.7 g. in BPUO group versus 9.4 g. in controls). HGF mRNA expression was significantly increased in BPUO kidneys when compared to normal controls ($p=0.01$). A positive correlation was identified between renal weight and expression levels of HGF mRNA by RT-PCR ($r = 0.713$; $p = 0.0028$). No significant

difference was present in gene expression of any component of the renal RAS and TGF-beta1 among the groups.

CONCLUSIONS

This study clearly demonstrates HGF mRNA induction in the fetal sheep kidney in response to partial ureteral obstruction with hydronephrosis and associated with obstructive hypertrophy. Fetal obstruction did not lead to a significant change in gene expression of renal RAS components assessed at term. HGF induction, independent from renal RAS, may be related to the complex regulation of the fetal renal response to obstruction.

#-22 (P)

Complete unilateral ureteral obstruction in the fetal lamb. long-term outcomes on renal tissue development

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PURPOSE

To analyze the dynamics of renal tissue response to experimental fetal urinary flow impairment (UFI) concerning renal morphology, extra cellular matrix (ECM) composition, regulators of connective tissue degradation and PAX2 protein expression.

MATERIAL AND METHODS

26 fetal lambs underwent surgical UUO at 90 days of gestation and 14 twin matched animals were used as controls. Kidneys were harvested at 10 days (group 1), 20 days (group 2), 40 days (group 3) following the prior procedure, and in one month old lambs. Morphological analysis was carried out using light microscopy. Picrosirius red staining was used to evaluate the area occupied by collagen fibrils. Collagen I, III, IV, α -SMA, MMP-1, -2, -9, TIMP-1, -2 and

PAX2 protein were assessed using immunohistochemistry.

RESULTS

All obstructed kidneys were hydronephrotic without dysplasia. Inflammatory response to obstruction was poorly present in fetal obstructed kidneys. From 10 days post obstruction, interstitial fibrosis was noted and confirmed by an increase in picrosirius red staining. In obstructed kidneys, immunohistochemistry showed an increase in collagen deposition. Aberrant interstitial collagen IV deposition was observed. Increase in α -SMA staining was mainly localized in blastema and interstitial cells in obstructed kidneys. MMPs and TIMPs immunostaining was mainly present in tubules throughout the whole nephrogenic period and persisted in mature kidneys. Beginning from 20 days post obstruction,

a progressive increase in expression of MMPs and TIMPs was noted. PAX2 protein was highly expressed in the nephrogenic zone, decreasing progressively to being markedly reduced in control lambs kidneys. No difference was found in PAX2 expression during the fetal period when comparing unobstructed and obstructed kidneys, but remained strongly expressed in dilated collecting ducts of obstructed lambs.

CONCLUSIONS

Complete UUO performed in fetal lambs at 90 days of gestation leads to pure hydronephrotic transformation, hypoplasia and marked increase in connective tissue deposition. Inflammatory infiltrates and PAX2 deregulation were not seen as playing a decisive role in these modifications.

#-23 (P)

Genetic studies on human urothelial cells in long-term cultures

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PURPOSE

In vitro culturing of autologous cells for clinical use is today an established method for tissue reconstruction. We have developed a method for primary reconstruction of the penile urethra in severe hypospadias, using in vitro cultured autologous urothelial cells. The aim of this

study was to examine if chromosomal aberrations occur in normal urothelial cells after long-term propagation in vitro.

MATERIAL AND METHODS

Urothelial cells were isolated by bladder barbotage and cultured up to 14 passages.

Chromosomal analysis of the cells was performed by karyotyping and by fluorescent in situ hybridization (FISH) as well as morphology and immunostaining. Cell culturing was performed with and without feeder cells of J2-3T3 type. Proliferations studies of feeder cells were undertaken after different pre-treatments with mitomycin C or gamma irradiation.

RESULTS

When urothelial cells are isolated from bladder wash, feeder cells are necessary in the primary culture to stimulate adherence, colony formation and urothelial cell proliferation. Further

subculturing without feeder cells reveal a normal karyotype up to 14 passages. On the other hand, when subcultivation continue with feeder cells added at each new passage these cells will overgrow the cell culture and an increased amount of tetraploidic urothelial cells are seen.

CONCLUSIONS

Urothelial cells, that are isolated from bladder barbotage and cultured with feeder cells in the primary culture only, exhibit a normal karyotype up to 14 passages.

#-24 (P)

Global gene expression patterns in mouse wolffian duct development

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PURPOSE

To determine global genetic expression patterns in the developing ureter. Specifically, to identify the genes responsible for terminal differentiation of the ureter.

gene array chips. The data was interpreted using Affymetrix software.

RESULTS

Of 42,000 evaluable genes, 412 were upregulated and 133 were down regulated by more than 1.5 fold between day E 11.5 and 14.5. Of those genes that showed altered expression by 5 fold or more during this same period, 46 were down regulated and 20 upregulated. Among these upregulated genes the majority fell into 2 classes; cell surface receptors and metabolic regulators. Of the 46 down regulated genes, the majority were involved in cell growth, proliferation and differentiation.

CONCLUSIONS

To our knowledge this is the first report of gene expression patterns in the developing mouse Wolffian duct. We observe a 5 fold change in expression of 66 genes which are identified to specific genetic families. Our results diverge from the published expression pattern reported in the kidney. This information will enable future comparisons between wildtype and transgenic knockout mice with abnormal ureteral phenotypes. It will also provide for further study of novel genes essential to ureteral development.

#-25 (P)

The c-terminal ca binding domain of sparac confers anti-spreading activity to human urothelium

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PURPOSE

Urothelial cells characteristically spread before undergoing cell division. We sought to determine whether SPARC (Secreted Protein Acidic and Rich in Cysteine) prevents this spreading activity in vitro by engineering recombinant preparation of wild-type SPARC and its extra-cellular (EC) domain and assessing the effect of these SPARC mutants on urothelial activity.

this to create a mutant SPARC proteins. Activity of these mutants (rSPARC) was compared to wild-type SPARC by assessing their affect on spreading of primary human urothelial cell cultures using a quantitative assay.

RESULTS

Urothelial spreading was inhibited by rSPARC and wild-type SPARC in a concentration dependent manner. Use of a mutant expressing the EC-Histidine domain of SPARC alone also demonstrated anti-spreading activity suggesting the

C-terminal extracellular Ca²⁺-binding domain of SPARC plays a central role in this inhibitory effect.

CONCLUSIONS

Knowledge of the mechanism by which urothelium repairs itself is necessary to understand how the urinary tract responds to injury, infection, and malignancy and to develop new strategies to treat these conditions. SPARC appears to play a role in modulation of urothelial cell growth via an inhibitory pathway which may be clinically useful in a variety of conditions.

MATERIAL AND METHODS

We constructed recombinant plasmids encoding the EC domain of SPARC and used

#-26 (P)

Genome-wide linkage analysis reveals two susceptibility loci associated with cryptorchidism in the le/orl rat**JULIA BARTHOLD, XIAOLI SI* and MARCELLA DEVOTO†***A.I. duPont Hospital for Children, Surgery/Urology, Wilmington, USA - * A.I duPont Hospital for Children, Surgery/Urology, Wilmington, USA - † A.I. duPont Hospital for Children, Genetic Epidemiology, Wilmington, USA***PURPOSE**

Undescended testis (UDT) in the superficial inguinal pouch is inherited in the LE/orl inbred rat strain at a frequency of 66%. Based on previous limited breeding studies, we hypothesized a recessive mode of inheritance. In order to identify the pattern of inheritance and genetic susceptibility loci associated with UDT, we performed breeding studies and linkage analysis of LE/orl rats.

MATERIAL AND METHODS

LE/orl affected male rats were intercrossed with normal WKY females

and heterozygous offspring then backcrossed to LE/orl rats. Parental genotyping identified 242 polymorphic microsatellite markers from a set of 310 genome-wide markers spaced at ~ 5 cM (Research Genetics). Twelve affected F₂ male rats were genotyped at these loci and further genotyping of a total of 36 affected males was completed at selected loci. Unaffected males (n=194) were genotyped at loci of interest. Association was tested using chi square analysis.

RESULTS

UDT was identified in 1 of 25 LE/orl X WKY males. Of 14 LE/orl X WKY parents

producing at least 2 litters, 11 delivered males with UDT; 37 of 220 (17%) males were affected. Suggestive linkage was noted at two loci on chromosomes 5 and 15 ($p = .002$) in regions containing novel candidate genes of interest. The LE/orl allele frequency at these two loci was significantly higher in affected males ($p < .0001$).

CONCLUSIONS

UDT is inherited as a dominant trait with reduced penetrance in the LE/orl rat and is associated with at least two susceptibility loci.

#-27 (P)

Failure of shortening and inversion of the perinatal gubernaculum in the cryptorchid le/orl rat**JULIA BARTHOLD, XIAOLI SI and KATIA SOL-CHURCH****A.I. duPont Hospital for Children, Surgery/Urology, Wilmington, USA - * A.I. duPont Hospital for Children, Research/Biomolecular Core, Wilmington, USA***PURPOSE**

Failure of testicular descent occurs in 66% of spontaneously cryptorchid LE/orl rats. The normal rat gubernaculum widens and shortens during late fetal life and inverts into the scrotum around birth. The purpose of this study is characterization of the morphology of testicular descent in LE/orl rats during perinatal development of the gubernaculum.

MATERIAL AND METHODS

Timed pregnancies of LE/orl and LE/wt (Long Evans wild type) strains were generated. Fetuses and newborn males (n=25-30/group) were rapidly removed on

gestational days 18-20 or collected on the day of birth and preserved in RNAlater® for at least 24 hours. Dissections were performed using a Nikon SMZ1500 stereoscopic zoom dissecting microscope with camera and dedicated image analysis software. The following observations were recorded: caudal testicular position as percent of renal-bladder neck distance, gubernaculum size and presence or absence of gubernaculum inversion at birth. Statistical analysis was performed using SPSS software.

RESULTS

The degree of testicular descent was not different between LE/orl and LE/wt rats

at any fetal time point. However, mean gubernaculum diameter was significantly smaller ($p < .001$) and gubernaculum length significantly greater ($p < .05$) in LE/orl fetuses at all time points. Inversion of both gubernacula occurred by the day of birth in 45% of LE/orl and 100% of LE/wt males ($p = .001$).

CONCLUSIONS

These data suggest that widening and shortening of the gubernaculum fails to occur normally in LE/orl fetuses. This failure may interfere with the timing and quality of inversion of the gubernaculum at birth, leading to failure of testicular descent into the scrotum postnatally.

Wednesday, 15 June 2005: 13:40–14:30

S03: Augmentation / Diversion

Chairs: P. Malone, R. Gonzalez

#-28 (P)

Contractile and relaxation properties of native bladder and ileal patch on ileal augmentation experimental model in rats

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PURPOSE

To determine the effect of ileal augmentation on in vitro pharmacologic contractile and relaxation properties of native bladder and ileal patch.

MATERIAL AND METHODS

A total of 45 albino rats between 200-250 gr weight were randomly subjected into 3 groups as ileal augmentation (n=25), sham (n=10) and control (n=10). Four weeks following sham and augmentation operations, rats were sacrificed. Strips from native bladder in all groups but also from ileal patch in augmentation group were prepared for organ baths containing Krebs solution. Contractile responses to carbachol (10^{-8} - 10^{-3} M), adenosine triphosphate (ATP) (10^{-3} M), KCl (120nm)

and electrical field stimulation (EFS), relaxation responses to isoproterenol (10^{-8} - 10^{-3} M) and adenosine (10^{-8} - 10^{-3} M) were studied in vitro. Statistical analyses were performed using independent t test, and $p < 0.05$ was considered statistically significant difference.

RESULTS

In term of contratile properties of bladder strips from augmented bladders, there were no significant change in response to carbachol, KCl and EFS while a significantly decreased response was observed to ATP at 10^{-3} M concentration ($p < 0.05$). On the other hand, administration of isoproterenol was yielded significant augmentation of relaxation properties of bladder strips ($p < 0.05$). Strips from ileal patch were presented

similar relaxation responses as controls, but contractile responses to carbachol, KCl and EFS were significantly lower than control group ($p < 0.05$). Furthermore, in vitro spontaneous periodic contractions, which were constantly observed in native ileum strips, were almost totally disappeared in ileal patches from augmented bladder.

CONCLUSIONS

Augmentation ileocystoplasty causes changes in pharmacologic responses at cellular and receptor levels in both ileal and bladder tissue. Our results suggest that these changes advocate establishment of low intravesical pressure level that is main goal of this procedure.

#-29 (P)

Bladder augmentation with an acellular dermal biomatrix (ADB) in a diseased animal model

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PURPOSE

We have shown that an ADB can be used successfully in directing the regeneration of each of the key elements of the bladder wall in healthy domestic pigs. The present study seeks to determine if ADB can be successfully used for bladder

augmentation in a model of bladder outlet obstruction.

MATERIAL AND METHODS

Six domestic pigs were obstructed at a bladder outlet resistance of 10 cm H₂O

for 4 weeks. The obstruction was then removed and the bladder augmented with a 4x4 cm segment of ADB. Standard urodynamic studies were performed 3 months following augmentation. Histology, contractility and compliance were evaluated in freshly isolated regenerated and native bladder tissue.

RESULTS

Following obstruction, bladder compliance was reduced from an average 24.7 ml/cm-H₂O to 4 ml/cm-H₂O. One pig died 2 weeks following augmentation due to graft separation and sepsis. 5 animals completed the study without complications. Histological evaluation of the regenerated tissue revealed extensive fibrosis with islands of poorly organized muscle. Contractility of the patch tissue

was reduced to as little as 10% of the tension produced by healthy tissue from non-obstructed augmented bladders. The obstructed bladder patch was as much as 14 fold stiffer than healthy bladder tissue.

CONCLUSIONS

While augmentation of healthy porcine bladder with ADB results in excellent regeneration of functional bladder tissue,

similar experiments in a model of obstructed bladder disease fail to yield favorable results. Results support the contention that matrices designed for human bladder augmentation should be tested in a disease animal model prior to recommending use in human bladder dysfunction.

#-30 (PWP)

Total continent reconstruction versus staged mace and catheterizable urinary channels

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PURPOSE

Increasingly, patients with myelodysplasia are undergoing complex continence surgery to maximize their quality of life. The surgeries to provide urinary and fecal continence are independent and may be performed either simultaneously, as a Total Continent Reconstruction, or as separate surgeries.

MATERIAL AND METHODS

We compared patients who underwent a Total Continent Reconstruction (TCR) to those who had a Malone antegrade continence enema (MACE) and a catheterizable urinary channel performed as separate procedures. A retrospective chart review was performed on all patients with myelodysplasia and analyzed for continence and surgical complications. Complications were categorized as either stomal-skin problems or more complex channel complications requiring laparotomy.

RESULTS

A total of 208 patients were identified: 160 who had a TCR, 17 had a staged reconstruction, 24 with only a catheterizable urinary channel, and 7 with only a MACE.

	Continent of urine	Continent of Stool	Incidence of Complications	% Stomal-Skin Comp.	% Complex Comp.
TCR	93%	95%	24%	57%	43%
Staged	94%	94%	24%	25%	75%
Urinary only	96%		17%	25%	75%
MACE only		94%	28%	100%	0%

None of the differences are statistically significant.

CONCLUSIONS

Most patients with neuropathic dysfunction due to myelodysplasia are incontinent of both urine and stool. It is

rare for a patient to require surgical intervention for incontinence of one and not the other. Our data does not show an increased risk of complication with simultaneous surgery, while achieving equivalent continence. Benefits of TCR include a single hospital stay, and avoiding a second laparotomy with its risks and inherently difficult dissection.

#-31 (PWP)

Variability of augmentation cystoplasty rates in patients with spina bifida among large US children's Hospitals registered with the phis database**THOMAS LENDVAY, CHARLES COWAN*, MICHAEL MITCHELL, BYRON JOYNER and RICHARD GRADY***Seattle Children's Regional Medical Center, Urology, Seattle, USA - * Seattle Children's Regional Medical Center, Pediatrics, Seattle, USA***PURPOSE**

To identify augmentation cystoplasty rates in children with spina bifida from children's hospitals enrolled in the PHIS (Pediatric Health Information System) database.

MATERIAL AND METHODS

The PHIS database tabulates demographic and diagnostic patient data from 35 children's hospital centers in the US. Between 1999-2004, patients 0-19 years of age with ICD-9 diagnosis codes for spina bifida were extracted by their encrypted medical record numbers. The ICD-9 procedure code for augmentation cystoplasty was cross-referenced with these patients to determine augmentation cystoplasty rates for each institution.

RESULTS

Over this period, 681 patients with myelodysplasia underwent augmentation cystoplasty with a mean of 20(1-121) augments per center and a per annum procedure number of 4 per institution. The mean augmentation rate for all hospitals combined from 2000-2003 was 6.6% (4.4%-7.8%). The highest augmentation rate by institution over the 5-year period was 16.3% and the lowest was 0.5% (p-value<0.0001).

CONCLUSIONS

The clinical management of neurogenic bladder conditions has evolved to emphasize non-operative management and has been shown to improve bladder compliance and protect renal function.

However, results from the PHIS database demonstrate no change in the augmentation rates over this time and demonstrate significant inter-institutional variation. Possible reasons for this include 1) variations in clinical practice patterns, 2) selection bias, as many centers registered are tertiary referral centers in their regions, and 3) sampling bias since not all children's medical centers are represented in this study. It remains to be seen if more aggressive non-operative management of spina bifida patients translates into decreasing rates of bladder augmentation.

#-32 (SO)

Comparative analysis of clinical outcomes with alternate methods of enterocystoplasty**GORDON MCLORIE, RICARDO GONZALES*, GAURAV BANDI* and OSAMA AL-OMAR****CHILDRENS HOSP MICHIGAN, PEDIATRIC UROLOGY, Detroit, USA - * PEDIATRIC, UROLOGY, Wilmington, USA***PURPOSE**

To compare the Clinical outcomes in patients following varied tissues and techniques of bladder augmentation.

MATERIAL AND METHODS

We report on a retrospective analysis of clinical outcome in 59 patients who underwent bladder augmentation between 1995 and 2003. Of these patients, three different surgical techniques were employed to achieve a greater bladder capacity: ileocystoplasty (n=8), colcystoplasty (n=29), or seromuscular colcystoplasty lined with urothelium (SCLU) (n=26). Our purpose was to assess the degree to which either of the surgical techniques resulted

in an enhanced efficacy or decreased complication rate. Outcomes measured included achievement of continence, or complications leading to subsequent surgical procedures including; bladder perforation, bladder calculi, need for augment revision, bowel obstruction or upper tract deterioration.

RESULTS

Patients with SCLU were compared to those with more traditional augmentation methods (colcystoplasty & ileocystoplasty). Children had their surgery at mean age of 9.9 years (3 months to 19 years), and follow-up time was mean 54 years (5 months to 10 years). Both groups of patients had similar success in achieving continence (80%). There was no

difference in surgical complications related to reflex or upper tract deterioration between the two groups. Contrary to anticipated outcomes, patients with SCLU had similar occurrences of Bladder calculi to those with ileocystoplasty and colcystoplasty. More patients with SCLU required revision of the augment to correct Bladder contractions

CONCLUSIONS

Patients undergoing SCLU were not free of the mucosa-related complications (calculi) as might have been anticipated. They did require an increase incidence of surgery for bladder contraction.

#-33 (SO)

Appendicovesicostomy versus Monti for Mitrofanoff channel- the Indiana experience in over 300 patients

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PURPOSE

The appendicovesicostomy and ileovesicostomy have important application in continent urinary reconstruction. Comparison of these techniques is indirect with relatively small series. We review a large, ongoing experience with both techniques, comparing initial and long term outcomes.

MATERIAL AND METHODS

We retrospectively reviewed the medical records of 309 patients that underwent a Mitrofanoff procedure with either ileum or appendix from 1982 to present. We compared complications, surgical procedures, and continence.

RESULTS

110 appendicovesicostomies with mean follow up of 50 months and 199 ileovesicostomies with mean follow up of 28 months were compared. Early surgical complications were found in 7/199 ileovesicostomies (3.5%) and 4/110 appendicovesicostomies (3.6%). Skin revision was necessary in 16/199 and 9/110 ileovesicostomies (8%) and appendicovesicostomies (8.2%), respectively. Bladder level revisions were required of 19/199 (9.5%) ileovesicostomies and 7/110 (6.4%) appendicovesicostomies. Channel replacement was performed in one ileovesicostomy (<1%) and in 3/110 (2.7%) appendicovesicostomies. Difficulty with catheterization was found in 14/199 ileovesicostomies (7%) and 6/110 appendicovesicostomies (5.5%). Channel

leakage was observed in 4/199 (2%) of ileovesicostomies and 2/90 appendicovesicostomies (2.2%). Comparing the use of appendix vs ileum, the difference between the incidence of early and late total complications (26.4% vs. 28.6%) was not statistically significant ($p=0.69$).

CONCLUSIONS

In this large series with mature follow-up, continent urinary reconstruction has been successfully accomplished with both appendix and ileum. The current series indicates that long term durability, complication rate, and continence are remarkably similar between these techniques.

#-34 (PWP)

The serosal lined extramural tunnel (Ghoneim) principle in the creation of a catheterizable channel in bladder reconstruction

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PURPOSE

The flap-valve mechanism is our preferred technique for the creation of a continent catheterizable channel in bladder reconstruction. We also prefer to place the stoma at the umbilicus. However it is not always possible to bring the conduit to the umbilicus when creating the flap-valve mechanism at the bladder level. To prevent this problem, we applied the Ghoneim technique to construct the flap-valve mechanism during ileal bladder augmentation as described by Plaire et al (J Urol 1999; 161 (4): 198)

MATERIAL AND METHODS

Ten patients (7 boys and 3 girls), 5 to 14 years old, underwent ileocystoplasty in combination with an apendicil Mitrofanoff procedure as a catheterizable channel. The U shape ileal segment was anastomosed to the bi-valved native bladder leaving redundant bowel on right side. The musculo-mucosal edges of the redundant bowel were sutured together forming the posterior wall of the tunnel. The appendix was positioned onto the musculo-mucosal suture line and the proximal end was anastomosed the reservoir with an advancement suture. The ileal segment was then imbricated over the appendix by interrupted silk sutures. This formed serosal lined

extramural tunnel. The stoma was placed in the depth of the umbilicus.

RESULTS

The underlying diagnose includes myelomeningocele (8) and posterior urethral valve (2). Mean follow-up time is 11 (6 to 23) months. All patients are continent and there no stoma complication such as stenosis or difficult catheterization.

CONCLUSIONS

The Ghoneim technique creates an effective continence mechanism and allows the conduit to easily reach the umbilicus.

#-35 (SO)

Ureterocystoplasty: videourodynamic assessment**MIGUEL PODESTA***Hospital de Niños Ricardo Gutierrez, Urology Unit, Department of Surgery, Buenos Aires, ARGENTINA***PURPOSE**

We evaluated the outcome of children who underwent ureterocystoplasty based on preoperative / postoperative videourodynamic studies.

MATERIAL AND METHODS

From 1977 to 2003, 8 patients (median age 6 years) with severe bladder dysfunction underwent ureterocystoplasty as a single procedure. Augmentation was performed with one severe refluxing ureter (7 patients) and with a nonrefluxing megaureter (1). All patients were evaluated urodynamically before and after augmentation using VUDS. Preoperative bladder capacity was estimated subtracting the volume trapped inside the refluxing ureter from total

contrast fluid infused to the bladder. Controls included 8 age matched (median 7 years) myelomeningocele children who had undergone ileocystoplasty, studied with the same videourodynamic methodology. Median age for ureterocystoplasty patients and controls at postoperative urodynamic testing was 7.3 and 11.2 years, respectively.

RESULTS

Median (range) cystometric bladder capacity (CBC) for age before and after ureterocystoplasty was 75% (10 – 92) and 94 (49 – 100), respectively. In the ileocystoplasty Group CBC increased significantly after augmentation (median 44% vs 118) p minus 0,0005. Comparison of postoperative CBC (in ml) between the 2

groups of patients showed significantly higher bladder volumes in the ileocystoplasty group (median 217 ml vs 290) p minus 0.02. When we analysed compliance (ml / cm.water) before and after ureterocystoplasty no statistically significance difference was found (4 vs 10.5). The same parameter in the ileocystoplasty group was statistical significant (1.6 vs 22) p minus 0.016.

CONCLUSIONS

Our retrospective study suggest that although ureterocystoplasty is a useful method to improve bladder storage abnormalities in select patients, enterocystoplasty is associated with better storage function outcome.

#-(36) (SO)

Shunt dysfunction after perforation of the augmented bladder**GILIAN BARKER, GÖRAN LÄCKGREN*, ARNE STENBERG and KAI ARNELL†**

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PURPOSE

We have studied the short term complications and particularly signs of shunt dysfunction after perforation of the augmented bladder in patients with myelomeningocele and ventriculo-peritoneal shunts.

MATERIAL AND METHODS

In our series of bladder augmentations in patients with myelomeningocele (n= 28) and ventriculoperitoneal shunt over the last ten years (1994-2004) we have encountered 5 patients (8-16 years) with bladder perforation 2-5 years after augmentation. Three patients received a colonic augment, one an ileal segment and one patient was autoaugmented. One

of the patients was operated for ileus 2 years after primary operation with an iatrogenic injury to the augmented bladder with a postoperative urine leakage.

RESULTS

After the primary open abdominal surgery and enterocystoplasty there was no sign of shunt-dysfunction or infection in any patient. Bladder perforation and leakage of free urine into the abdominal cavity occurred in four of the 5 patients. In those patients, severe symptoms of shunt dysfunction (headache, high intracranial pressure) were found 2-7 days after perforation. In all cases the shunt had to be extraperitonealised for 1 – 6 weeks without further complications. In the last

patient there was only urine leakage into a small cavity close to the bladder and there was no sign of post-perforation shunt dysfunction.

CONCLUSIONS

In the myelodysplastic patient with bladder perforation and free urine in the abdominal cavity the peritoneum is chemically inflamed by the urine and the resorption of cerebral liquor may be disturbed, leading to shunt-dysfunction and high intracranial pressure. Therefore it is important for the urologist to recognise and to check for postoperative signs and symptoms of increased intracerebral pressure in these patients with bladder perforation and an early CT-scan of the brain is recommended.

Wednesday, June 15 2005: 14:30–15:10

S04: Anorectal malformation - neuropathic bladder

Chairs: T. Boemers, T. Casale

#-37 (P)

13Q Critical region for anorectal and urogenital anomalies

NILDA GARCIA, LANE SANTOS*, OLIVER BARTSCH†, ROGER SCHULTZ‡, ANDREW ZINN* and LINDA BAKER¶
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PURPOSE

The 13q-deletion syndrome includes severe genitourinary and anorectal birth defects. Bartsch et al. (Am J Med Genet 65:218, 1996) have suggested a critical region for these anomalies in the interval of 13q32.2-34. We sought delineate the causal gene(s) by narrowing this critical region.

MATERIAL AND METHODS

Nine patients with known deletions around 13q32-qter and available parents were recruited. Deletions were mapped by loss of heterozygosity of microsatellite markers and/or by fluorescence in situ

hybridization (FISH) on lymphoblastoid metaphase preps from peripheral blood. The data were synthesized and a deletion map defining the critical region was generated.

RESULTS

Phenotypically, the patients fell into three groups: 1) four patients with anorectal and/or genitourinary anomalies (hypospadias and/or penoscrotal transposition), 2) three male patients with developmental delay but no anorectal or genitourinary anomalies, and 3) two XY patients with ambiguous genitalia without anorectal anomalies. The proximal

boundary of the critical region was delimited by marker D13S280 in 13q33.1.

CONCLUSIONS

The critical region of chromosome 13q mediating genitourinary/anorectal anomalies has been mapped to an 11 Mb interval containing 20 annotated candidate genes. Haploinsufficiency of 13q shows incomplete penetrance for anorectal and genitourinary anomalies. Identification of the gene(s) mediating these syndromic genitourinary defects will likely further our knowledge of molecular mediators of nonsyndromic hypospadias, penoscrotal transposition and anorectal malformations.

#-38 (SO)

Outcomes in adult females after anorectal malformation repair

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PURPOSE

This study aims to assess the long-term outcomes of female adults who were born with Anorectal Malformations (ARM), with particular attention to urological, bowel, gynaecological, and psychosexual function.

MATERIAL AND METHODS

Patients were identified from the original hospital database. The patients were sent questionnaires assessing urinary, bowel, gynaecological and sexual function. The patients were also requested to attend

a clinic for further questioning and an examination.

RESULTS

Questionnaires were sent to 26 females and 19 were returned completed (73%).

The medical records of the 19 patients aged between 18 to 36 years old identified as having an anorectal malformation at birth and treated at one institution from 1968 to 1986 were retrospectively reviewed. Mean patient age at the time of this review was 23.6 years. 8 were identified as having had a low ARM, 6 high ARM and 5 had a cloacal anomaly. 7 out of the 19 (37%) were incontinent of urine,

the remaining 12 were dry, 2 using a mitrofanoff and 2 intermittently self catheterised. 8 of the 19 were continent of faeces (42%), a further 3 were socially continent with stomas and 8 were incontinent of faeces. 12 of the 19 were sexually active (63%), and of these 3 had become pregnant. 1 underwent a termination and the other 2 had vaginal deliveries.

CONCLUSIONS

Comprehensive data on long-term outcomes after repair of anorectal malformation are limited and these preliminary results are encouraging.

#-39 (SO)

Clinical and urodynamic outcome of tethered cord release

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PURPOSE

We assessed the outcome of patients who underwent tethered cord release at a children's hospital.

6/24 constipation, and UTI in 1/24. Urodynamic parameters pre and post-operatively:

MATERIAL AND METHODS

Retrospective review of patients referred with a diagnosis of tethered cord May 2001-Oct 2004. Patients assessed pre-op by standard urodynamic studies, repeated at least 3 months (mean 6.4) after tethered cord release. Clinical and urodynamic outcomes were contrasted between both periods.

RESULTS

24 patients (10 M/14 F) aged 1 month – 12 yrs (mean 5.1 yrs) were evaluated. Patients were neurologically normal. 13/24 were toilet trained, 7/13 had diurnal enuresis, 10/24 constipation, and UTI in 6/24. Post-operatively 15 patients were toilet trained, 1/15 had diurnal enuresis,

Of 17 patients with hyperreflexia pre-operatively, 10 normalized and 6 remained unchanged. Of 3 patients who had normal pre-operative urodynamics, 2 developed hyperreflexia and 1 developed poor bladder compliance. Four patients with low bladder capacity and/or compliance did not improve with cord release.

Parameter	Pre-op	Post-op
Bladder capacity (ml)	103.9	148.6
Pressure at capacity (cm H ₂ O)	36.2	17.2
Compliance ml/cm H ₂ O	5.8	23.6
Hyperreflexia (# patients)	17	11
PVR (ml)	19.6 (18.2% BV)	4.7 (3.1% BV)

CONCLUSIONS

Clinical improvement is seen in most patients after tethered cord release. In patients with abnormal urodynamics pre-operatively, improvement is seen in 47%, primarily those with hyperreflexic bladders. Patients with low capacity / poorly compliant bladders do not seem to benefit urodynamically from this intervention. Patients with normal bladders may show urodynamic deterioration post-operatively, and this raises cause for concern.

#-40 (P)

Urodynamic patterns of myelomeningocele patients who develop spontaneous continence during conservative treatment through puberty**SAKINEH HAJEBRAHIMI, MOHAMED EL SHERBINY*, ROMAN JEDNAK and JL PIPPI SALLE***Montreal Children Hospital, Urology, Montreal, CANADA - * McGill University, Montreal Children's Hospital, Pediatric Urology, Montreal, CANADA***PURPOSE**

The post-pubertal urodynamic parameters associated with the spontaneous development of urinary continence in children with myelomeningocele managed conservatively through puberty were reviewed.

MATERIAL AND METHODS

The records of all patients with myelomeningocele following a regimen of conservative bladder management through puberty were retrospectively reviewed. A total of 43 patients were identified and of these 17 were incontinent pre-pubertally. All were managed exclusively with anticholinergics and/or clean intermittent

catheterization. The pre- (10 years of age) and post-pubertal (13 years of age) urodynamic parameters in 10 patients (4 males 6 females) achieving spontaneous urinary continence post-pubertally, and in 7 (3 males 4 females) patients with persistent incontinence were compared.

RESULTS

The total cystometric bladder capacity (TCBC) in the continent group increased from 329 ± 209 ml before puberty to 476 ± 156 ml after puberty ($P > 0.05$). In continent patients, the maximal detrusor pressure (MDP) and the mean detrusor leak point pressure (DLPP) were 55 ± 20 and 67 ± 27 cm H₂O ($P > 0.05$) and 60 ± 22 and 66 ± 18 cm H₂O ($P > 0.05$) before and after puberty respectively. In incontinent

group, the CBC was 229 ± 78 ml and 262 ± 136 ml before and after puberty respectively ($P > 0.05$). The MDP was 40 ± 28 and 64 ± 38 cm H₂O before and after puberty respectively ($P < 0.05$). The mean DLPP was 50 ± 22 and 18 ± 12 cm H₂O before and after puberty respectively ($P > 0.05$).

CONCLUSIONS

The spontaneous development of urinary continence post-pubertally in myelomeningocele patients is associated with an increase in TCBC and not related to increasing bladder outlet resistance because of prostate gland enlargement in male or estrogen secretion in female at post puberty as previously thought.

#-41 (P)

Urological outcome in patients with caudal regression syndrome, compared with meningomyelocele and spinal cord lipoma**MICHELE TORRE, PIERO BUFFA, ARMANDO CAMA* and VINCENZO JASONNI***GIANNINA GASLINI INSTITUTE, pediatric surgery, Genova, ITALY - * GIANNINA GASLINI INSTITUTE, NEUROSURGERY, Genova, ITALY***PURPOSE**

Patients with neural tube defects can present very different urological outcome. Our aim was to compare a series of patients with caudal regression syndrome (CRS) followed-up in a single centre, with patients with meningomyelocele (MMC) and spinal lipoma (SL)

MATERIAL AND METHODS

Only cases with complete urological assessment and regular follow-up were included. Children who underwent augmentation or bladder neck surgery

were excluded. We studied 398 patients, ranging from 1 to 37 years of age: 69 CRS, 244 MMC and 85 SL. The following parameters were studied: congenital renal anomalies, renal function (measured by creatinine clearance and renal scan), VUR, upper tract dilatation, urodynamic pattern and urinary continence.

RESULTS

Single kidney was much more frequent in CRS (20%), compared with MMC (1.4%), and SL (0%). VUR was found in 38% of CRS, 43% of MMC and in 21% of SL. Upper tract dilatation without VUR was rarely detected (4.3% of CRS, 5.4% of MMC, and

5.9% of SL). CRS patients had a higher risk of impaired renal function (8.7%), compared with MMC (5.4%), and SL (1.2%). Neuropathic bladder was found in 61% of CRS, 98% of MMC and 42% of SL. Among them, CIC and drugs allowed 30% of CRS, 44% of MMC and 71% of SL patients to be dry for more than 4 hours.

CONCLUSIONS

Diagnosis strongly influences the urological outcome in neural tube defects. Renal agenesis is very frequent in CRS patients. In term of continence and renal function, CRS has a prognosis similar, if not worse, than MMC.

#-42 (P)

First results of a survey to evaluate health-related quality of life of children with a myelomeningocele**IRIS KOERNER, CHRISTIANE SCHLUETER*, HILDEGARD LAX† and HERBERT RUEBBEN‡**

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PURPOSE

Health-related quality of life is an important criterion in evaluating the state of health. In contrast to "classical" medical criteria used to describe health, health-related quality of life includes and integrates subjective assessments of physical, psychological and social aspects of health. Representative data on health-related quality of life in children and adolescents with myelomeningocele (MMC) is lacking so far. We report our first results from an survey using the KINDL-R-questionnaire and additional survey data.

MATERIAL AND METHODS

Of 241 young patients (113 boys and 128 girls) with a MMC born between 1982 and 2000, 119 could be contacted. 74 KINDL-R-questionnaires were filled out and evaluable. The KINDL-R is a validated questionnaire and a multidimensional instrument comprising 6 scores (physical and psychological well-being, self-esteem, family, friends, everyday functioning) for relevant quality of life aspects as well as providing reference scores derived from assessing healthy children. An additional questionnaire was developed to supplement the KINDL-R with questions specific to the impairments seen in MMC patients (bladder voiding and defecation, urinary tract infection, impaired mobility, medication and impairment in social life).

RESULTS

The score for physical well-being seen in our patients was significantly lower than the reference value whereas the score concerning the family was higher in the MMC patients. Further differences concerning the scores for psychological well-being, self-esteem, friends and everyday functioning were not found.

CONCLUSIONS

The impairment in physical well-being was to be expected considering the nature of the disease. However, it is surprising that the familial quality of life was above the reference level and that there were no further discrepancies.

Wednesday, June 15 2005: 15:10–15:45

S05: Hypospadias 1

Chairs: S. Tekgul, H. Snyder III

#-43 (P)

Genome-wide linkage analysis for hypospadias susceptibility genes

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PURPOSE

Hypospadias, when the urethra opens on the underside of the penis, is a common malformation that occurs in about 1 per 300 boys. The etiology of hypospadias is unknown, but several lines of evidence indicate that it is a complex disorder, caused by the combined influence of genetic and environmental factors. So far no gene has been identified that causes isolated forms of hypospadias even if some genes, especially in the androgen metabolism, cause hypospadias as part of syndromes. In order to identify chromosomal loci involved in the

pathogenesis of hypospadias, we conducted a genome-wide linkage analysis

MATERIAL AND METHODS

DNA from sixty-nine families with at least two members with isolated hypospadias were genotyped with 360 microsatellite markers. The markers were spread over the whole genome and were analysed with a non-parametric affected relative pair method. Of the families, 58 were of Swedish origin and 11 came from the Middle East.

RESULTS

Suggestive linkage was found at four chromosome regions: 9q22 (in all families), 2p11, 10p15 and 10q21 (in Swedish families).

CONCLUSIONS

These results will provide a basis for outlining the genetic background of hypospadias. This study is continuing to finemap genes for hypospadias in these candidate gene regions by analysing more markers and DNA from more families.

#-44 (PWP)

Do patients with hypospadias and cryptorchidism share a common phenotype?

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*S.Camillo Hospital, Pediatric Surgery, Rome, ITALY - * University "La Sapienza", S.Camillo-Forlanini Hospital, Medical Genetic, Rome, ITALY*

PURPOSE

Children affected by hypospadias, often exhibit a peculiar facies characterized by large forehead with frontal bossing, telecantus broad flat nasal bridge. These facial traits, that are also part of the clinical spectrum of the Opitz-GBBB syndrome, in which hypospadias is one of the main features, are somehow different from the true Opitz syndrome and may define a distinct entity. We have recently observed that many children with undescended testis share similar features. The aim of this study is to demonstrate this association and to define its statistical relevance.

MATERIAL AND METHODS

More than 200 caucasian patients affected by hypospadias and 100 presenting with undescended testis seen at our outpatient department were registered, photographed and evaluated for biometric indexes. An age matched control group of children was compared

RESULTS

We found a clear association, in patients affected by distal and penile hypospadias, with the previously described facial features while this association appear less

frequent in proximal forms. Similarly a significant amount of patients with undescended testis show the same facial features.

CONCLUSIONS

Most children with hypospadias and undescended testis have peculiar facial features whose frequency seems statistically relevant if compared with control group.

#-45 (P)

Post-operative testosterone and tissue healing following repair of iatrogenic hypospadias in rabbits**JOHN BROCK, MATTHEW HASSAN, ROMANO DEMARCO*, MONICA REVELO†, MARK ADAMS and JOHN POPE***Vanderbilt University, Urology, Nashville, USA - * Vanderbilt University, Urologic Surgery, Nashville, USA -**† Vanderbilt University, Pathology, Nashville, USA***PURPOSE**

The use of testosterone has been shown to increase skin vascularity phallic size when administered prior to hypospadias repair. We evaluated the role of postoperative testosterone in a rabbit hypospadias model.

MATERIAL AND METHODS

Hypospadias was created in 18 New Zealand White rabbits by excising a 2 cm segment in the distal urethra. A full thickness preputial onlay graft covered the defect. Animals were randomized to receive either one intramuscular dose of depot testosterone immediately post-operatively (6), or 2 weeks of daily applications of 1% topical testosterone (6). Control animals underwent the urethral operation, but received no testosterone post-operatively (6) were also evaluated. The penises were then harvested at 2 and 5 weeks and blindly

assessed for collagen formation, extent of re-epithelialization and fibrosis, as well as for complications such as urethrocutaneous fistula or diverticulum formation. The slides were examined on H&E, trichrome, and sirius red stains, as well as with immunohistochemistry. For histological analysis a semi-quantitative scoring system for fibrosis and inflammation was used (0% = none, 0 points; <25% = mild, 1 point; 25-50% = moderate, 2 points; >50% = severe, 3 points).

RESULTS

In the animals that were sacrificed at 2 weeks, 67% had cuboidal urethral epithelium as compared to squamous epithelium. Those that received testosterone had a greater incidence of cuboidal epithelium (100% for IM, 67% for topical) versus controls (33%). By 5 weeks, 22% of all animals' epithelium had persistent cuboidal characteristics. Again,

the incidence was higher in both testosterone groups (33% for both IM and topical) than in controls (0%). In the 2 week group, animals receiving testosterone had increased fibrosis, periurethral and soft tissue inflammation as compared to controls (1.7, 0.7, 2.0 for IM; 2.3, 1.3, 2.0 for topical; versus 0.7, 0.3, 1.3 for controls). By 5 weeks, all differences in fibrosis and inflammation had resolved. No animal in any of the groups had urethrocutaneous fistula or diverticulum formation.

CONCLUSIONS

The use of post-operative testosterone may enhance urethral healing. Animals receiving testosterone seemed to have an exaggerated early inflammatory response. With further investigation, exogenous testosterone may prove a useful adjunct for complex hypospadias repairs.

#-46 (PWP)

Experimental hypospadias repair in rabbits. an impedance planimetry study**MARIANNA LALLA, JENS CHRISTIAN DJURHUUS*, LARS HENNING OLSEN† and TROELS MUNCH JORGENSEN†***Aarhus University Hospital Skejby, Pediatric Urology, Institute of Clinical Medicine, Aarhus N, DENMARK - * Aarhus University, Institute of Clinical Medicine, Aarhus N, DENMARK - † Aarhus University Hospital Skejby, Pediatric Urology, Aarhus N, DENMARK***PURPOSE**

To investigate in vivo the biomechanical properties of rabbit urethra in a hypospadiac model.

MATERIAL AND METHODS

Thirty-eight 9-weeks old New Zealand white male rabbits (2 kg) underwent experimental creation of hypospadias-like defect and acute repair (shams, mobilization and advancement, Tubularized Incised Posterior urethral

plate Urethroplasty (TIPU), modified TIPU, in which a pair of stitches were put at the edges of incised posterior urethra and into the corpora to keep the incised urethra open). After 23 weeks the 4 groups + a control group (3-4 kg) underwent biomechanical investigation (impedance planimetry). After preconditioning measurements were performed in 3 positions (distal urethra, spongy urethra and spongy-bulbous urethra) using increment in pressure up to 50 kPa. The same measurements were repeated in all 3 positions, thereafter the animals were sacrificed.

RESULTS

Eight rabbits were excluded from the study. At preconditioning the major findings were a gradually increased compliance from distal to proximal urethra; the initial compliance was larger in the advancement group compared to the others. At following measurement results were inconsistent with the same results as during preconditioning for all groups, apart from the modified TIPU with a reduced compliance registered in spongy urethra.

CONCLUSIONS

Acute urethral lesion and repair was examined 6 months later. Substantiated

differences were found in 2 TIPU groups related to the fixation of incised urethra. The biomechanical method used in the clinical assessment in human urethra is

feasible in the evaluation of experimental hypospadias repair; it maybe used in future in evaluating new hypospadias repair techniques.

#-47 (PWP)

Early cellular and ultrastructural response to urethral ischemia in rabbit hypospadias model

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PURPOSE

To evaluate the maximum duration of ischemia, and to confirm the reversible or irreversible urethral cell ischemia according to urethral ischemic time, types of tourniquetting and the light and transmission electron microscopic (EM) findings in different ischemic groups.

MATERIAL AND METHODS

twelve rabbits anesthetized and underwent penile degloving, followed by ventral horizontal urethral detubularization and timed penile tourniquetting by an elastic band similar to hypospadias surgery. The animals were

divided into 6 groups, according to the duration of the tourniquetting; 15, 30, 45 and 60 minutes, intermittent tourniquetting and injection of epinephrine (diluted 1:200,000), respectively. Tissue samples for light and electron microscopy were taken before, immediately after the ischemia and following 1-hour reperfusion and after 15 days, postoperatively in each subject. The structural and ultrastructural changes to the urothelium were studied by light and transmission electron microscopy (EM).

RESULTS

There were no visible specific changes in light microscopy before and after the

ischemia in most of samples. The transmission EM study showed irreversible ultrastructural changes in 60 min ischemia and 45 and 60 min ischemia and reperfusion.

CONCLUSIONS

By using continuous penile tourniquet for 30 min during the hypospadias surgery, there will be no devitalization in the urethral epithelium, which may decrease the surgical complications such as urethra-coetaneous fistula or urethral stricture that may be accounted as a result of ischemic tissue necrosis.

#-48 (SO)

Long-term follow-up of direct visual urethrotomy for management of short < 1cm urethral strictures following hypospadias repair

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Mayo Clinic, Urology, Rochester, USA

PURPOSE

To review the results of direct visual internal urethrotomy (DVIU) in the treatment of short (< 1 cm) anterior penile urethral strictures following hypospadias surgery.

MATERIAL AND METHODS

Pts with < 1 cm anterior penile urethral strictures located proximal to the meatus underwent DVIU. Half of the pts were placed on CIC for 3 months. Post operative evaluations occurred at 3-6 month intervals. Success was defined as absence of obstructive voiding symptoms and a normal uroflow 2 yrs following the pts last instrumentation.

RESULTS

Location of the hypospadias was penoscrotal or more proximal in 70% (50 pts), proximal penile in 26% (19 pts), and mid penile in 4% (3 pts). The hypospadias repair used tubularized graft urethroplasty, (20 bladder, 6 buccal, 6 preputial skin) in 32 pts/44%. A tubularized island flap in 18 pts/25%, a onlay flap urethroplasty in 11pts/15%, tubularized urethral plate in 7 pts/10% a two staged urethroplasty in 4pts/6%. 37 pts/51% were treated with DVIU alone and 35 pts were treated with DVIU & CIC. No

difference in success between these two methods was found 9/37 (24%) vs 8/35 (22%) respectively. Following DVIU all pts with graft urethroplasties were failures. Success was noted in 2/18 (11%) of tubularized flap urethroplasties, 8/11 (72%)* of onlay flap urethroplasties, 5/7

(71%)* tubularized plate urethroplasties and 2/4 (50%)* two stage urethroplasties* .
*p < 0.05 compared to graft urethroplasties.

CONCLUSIONS

At 2 yrs DVIU +/- CIC universally failed following any type of graft urethroplasty but has moderate success following flap urethroplasties.

#-49 (SO)

Caudal bupivacaine vs penile block for analgesia in hypospadias surgery

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PURPOSE

Prospective, randomised, double blind, controlled trial to evaluate efficacy of caudal bupivacaine versus penile block for analgesia in distal shaft hypospadias repair.

MATERIAL AND METHODS

Between September 2001 and September 2002, 90 patients underwent distal hypospadias repair using a stented Duplay Snodgrass technique under general anesthesia. Patients were randomised in 3 groups. Group I (30 patients): caudal analgesia was obtained by injection of 1 ml/kg of bupivacaine 0,25% with adrenalin. Group II (30 patients): penile block by injection of 0,5 ml/kg of bupivacaine 0,25% without adrenalin in

each side. Group III (30 patients): control group in which analgesia was obtained by morphin during surgery and paracétamol – codeine after surgery. Evaluation of analgesia during surgery was based on hemodynamic and respiratory parameters and the need of morphins. Evaluation in post-operative period was based on the CHEOPS scale and the need of further medication at Ho, H2, H4, H8 and H12. Side effects and motor block were also evaluated. Statistical analysis used the Chi 2 test and the Kurskal Kallis test. P<0,05 was considered significant.

RESULTS

Patient demographics (age and weight) and mean duration of operative time were similar in all groups. Pain scores were lower in Group I compared to Group II. The

need of further post-operative medication was also lower in group I. Duration of analgesia was longer in group I (H10) than in group II (H6). Vascular puncture was noted in two patients in group II.

CONCLUSIONS

Caudal analgesia is more effective for hypospadias surgery than penile block. This analgesia is effective up to 10 hours after surgery. Penile block may be an alternative but with adjunction of other analgesic medication.

#-50 (PWP)

A new variance to surgical reconstruction of the concealed penis

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PURPOSE

The concealed penis has a varying presentation which ranges from mild to severe where no penile shaft and glans is visible. When diagnosed, circumcision is often delayed, but many pts are referred after circumcision. We report a new technique to restore the penis which can

be applicable and simple in virginal and revision cases.

MATERIAL AND METHODS

From Aug. 2001 to Aug. 2004, 55 boys underwent the procedure, median age of 2 yrs (6 mos to 12 yrs). 32 pts already had circumcision and the rest was referred for

initial repair. 20 pts had other procedures (8 - hypospadias, 12 - scrotoplasties). The penis is degloved deeply into the penopubic and penoscrotal junctions superficial to the Bucks fascia. The highlight of the procedure is the abnormally attached Dartos fascia which is now mobilized away from the penile shaft skin and Bucks fascia, is resected down to the new junctions. This allows the

shaft skin to shift back proximally to a more normal anatomical position. The shaft skin is now anchored to the Bucks fascia at the key junctions with absorbable sutures followed by a formal circumcision.

RESULTS

Follow up is 3 mos to 24 mos. Pts are evaluated in the supine and standing positions. The families rate the cosmetic and satisfaction results as excellent and

very happy. Complications include 3 pts with a mildly deepened penopubic skin crease, 1 pt with a partial concealed penis due to a large fat pad, but the glans is still exposed. No wound infections or penile edema were noted.

CONCLUSIONS

For parents who wish to have their boys circumcised in the face of penile concealment, this technique gives

a normal appearing penis with excellent cosmesis. The critical step of removing the abnormally positioned and tethering Dartos fascia is key to allow an anatomical skin coverage which differs from other techniques. It is simple and can be applied to a wide variation of degree of concealment and other conditions such as hypospadias and penoscrotal webbing.

Wednesday, 15 June 2005: 16:15–17:00

S06: Obstruction & hydronephrosis

Chairs: A. Stenberg, D. Joseph

#-51 (SO)

Does the magnitude of fetal renal pelvic dilation identify obstructive postnatal hydronephrosis?

DOUGLAS COPLEN, PAUL AUSTIN and JEFF DICKE*

*Washington University, Pediatric Urology, Saint Louis, USA - * Washington University, OBGYN, Saint Louis, USA***PURPOSE**

The commonly accepted anteroposterior diameter cutoffs for post-natal referral were described in 1991 and based upon a study population of only 45 infants (Am J Obstet Gynecol 165:384-8, 1991). We chose to evaluate fetal renal pelvic measurements (RPD) in a larger population and determine whether these appropriately direct post-natal evaluation and management.

MATERIAL AND METHODS

A retrospective analysis of prospectively collected measurements of RPD obtained at a single center between 1994 and 2000 was performed. Fetuses with RPD > 4mm

at > 33 weeks or >7mm at > 33 weeks were evaluated at a single pediatric urology center with ultrasound, voiding cystourethrograms, and renal scintigraphy. Infants were followed until identified findings resolved. Infants were followed conservatively. Surgery was performed for declining function or increasing hydronephrosis. Obstruction was defined as the need for surgery and was not based upon the drainage time on renal scan.

RESULTS

There were 231 neonates. The mean RPD was 11.8mm in 150 with non-obstructive dilation, 14.4mm in twenty-two with reflux without obstruction, and 22.3 mm

in fifty-nine infants with obstruction. This was statistically different than the other two groups. Receiver operating characteristics (ROC) analysis reveals that the RPD that correctly discriminated obstruction in the highest percentage (85%) of fetuses was 17mm with 70% sensitivity and 91%.

CONCLUSIONS

The current thresholds for postnatal evaluation of RPD (4mm and 7mm) offer 100% sensitivity for detection of obstruction but have a false positive of > 90%. The ROC analysis provides a very useful guide for prenatal counseling and may help to direct the postnatal evaluation.

#-52 (SO)

Prenatal ultrasound has led to earlier detection and repair of ureteropelvic junction obstruction

BARRY KOGAN, SETH CAPELLO, RONALD KAUFMAN, JR. and LOUIS GIORGI, JR.

*Albany Medical Center, Urology, Albany, USA***PURPOSE**

We hypothesized that the widespread adoption of prenatal ultrasonography in the early 1980s has led to both earlier and increased number of pyeloplasties.

MATERIAL AND METHODS

The New York State Department of Health database was used to identify all patients

who underwent pyeloplasty in New York State between 1984 and 2002.

RESULTS

A total of 6,725 pyeloplasties were evaluated. There was no substantial change in the rate of pyeloplasty when adjusted for the number of live births over the study period. The annual rate of pyeloplasty in patients <1 year of age increased from 19 to 31 per 100,000 live

births from 1984-1988 to 1989-2002. This same upward trend was seen in the 1-9 year age group. In contrast, there was a substantial decrease in the rate of repair over time in the 10-19 and 20-29 year groups (20 to 16, and 27 to 11 per 100,000 live births, respectively). The male/female ratio of newborns in our series was 3:1, consistent with previous reports. In older patients, males underwent fewer repairs such that the male/female ratio in patients over 30 years was 1:2.

CONCLUSIONS

The overall rate of pyeloplasty has not changed over the past 19 years, but there

has been a substantial trend toward repair at an earlier age. This suggests that prenatal ultrasound has led to earlier diagnosis of UPJ obstructions, allowing

earlier repair and obviating later repair. We also report the novel finding of a decreasing rate of pyeloplasty in males with age, which does not occur in females.

#-53 (PWP)

Conservative treatment of pelvi-ureteric junction obstruction in children with antenatal diagnosis of hydronephrosis: lessons learned after 16 years of follow up

BORIS CHERTIN, AVNER POLLACK, DMITRY KOULIKOV, ALON FRIDMANS, RON RABINOWITZ*, IRIT HADAS-HALPERN† and AMICUR FARKAS

*Shaare Zedek MC, Urology, Jerusalem, ISRAEL - * Shaare Zedek MC, Obstetric Ultrasound Unit, Jerusalem, ISRAEL -*

† Shaare Zedek MC, Diagnostic Radiology, Jerusalem, ISRAEL

PURPOSE

We have retrospectively evaluated our over 16 years experience with these children and tried to determine those who are at risk for surgery.

MATERIAL AND METHODS

507 (395 males and 112 females) with antenatal diagnosis of pelvi-ureteric junction PUJ obstruction were followed conservatively over 16 years period (1988-2003). Rt sided hydronephrosis was in 110, Lt in 213 and Bil obstruction in 164 children. According to the classification of Society for Fetal Urology (SFU), 2 children had grade 0 postnatal hydronephrosis,

96 grade 1, 166 grade 2, 126 grade 3, and the remaining 107 children grade 4 of postnatal hydronephrosis. Relative renal function (RRF) on radionuclide scans revealed 345 children with RRF more than 40%, 107 with RRF between 30-40%, and 55 patients with RRF less than 30%. Renal function deterioration of more than 5% and persistent obstructive pattern on radionuclide scans served as main indications for surgery.

RESULTS

270 (53.3%) required surgical correction. Average age at surgery was 7.1 months (range 1month-7 years). Univariate analysis revealed that child sex, side of

obstruction and SFU grade of prenatal hydronephrosis are not significant predictive factors for surgery. SFU grade 3-4 of postnatal hydronephrosis ($p < 0.0001$, Odds ratio 0.01913), RRF less than 40% ($p < 0.0001$, Odds ratio 0.09502) were significant independent risk factors for pyeloplasty.

CONCLUSIONS

Our data show that more than 50% of children with antenatal diagnosis of PUJ obstruction required surgical correction while on conservative protocol. SFU grade 3-4 of postnatal hydronephrosis and RRF less than 40% are significant independent predictive factors for surgery.

#-54 (P)

Clinico-pathological correlations in congenital ureteropelvic junction obstruction (upjo)

CRAIG PETERS, JOSEPH BORER*, STUART BAUER*, DAVID DIAMOND* and SEYMOUR ROSEN†

*Childrens Hospital Boston, Urology, Boston, USA - * Childrens Hospital, Urology, Boston, USA - † Beth Israel Deaconess, Pathology, Boston, USA*

PURPOSE

Clinical imaging of congenital UPJO is the basis for management and follow-up assessment. The correlation between modern imaging and pathological changes in the affected kidneys is not well established. We therefore sought to investigate that correlation.

MATERIAL AND METHODS

Renal biopsies in 61 children with UPJO undergoing pyeloplasty were evaluated

with 30 age-matched controls. Pathological assessment was based upon glomerular and tubular changes. 20 biopsies with minimal alterations underwent detailed morphometric evaluation.

RESULTS

There was poor correlation between pathological changes and differential uptake on radionuclide imaging, with almost 50% of the patients having normal uptake but significant tubulointerstitial

changes. Those with uptake less than 40% had a significantly higher incidence of pathological changes in the tubulointerstitium ($p=0.025$). Following surgical repair, the change in differential uptake was not predicted by pathological patterns. With more severe obstruction and age, fibrosis increased. Even in patients with no overt changes in the tubulointerstitium, significant reductions in tubular mass were documented morphometrically ($p < 0.006$). With increasing hydronephrosis proximal tubular mass was reduced. Proximal

tubular mass was less in patients with an initial $t_{1/2} > 20$ minutes ($p=0.015$).

CONCLUSIONS

Clinical parameters used to assess UPJO do not accurately represent

histopathological changes, nor predict recovery, although there is a loose correlation with some parameters. Some patients with intact "function" have significant histopathological changes. There is suggestion of progressive fibrosis with age that is not indicated by

diagnostic imaging. A re-assessment of the clinical indicators used in the evaluation of hydronephrosis should be a priority.

#-55 (SO)

The minimally invasive open pyeloplasty

JOB CHACKO, PETER FURNESS and MARTIN KOYLE
the children's hospital of denver, urology, Denver, USA

BACKGROUND

The dismembered pyeloplasty is the operation of choice to address ureteropelvic junction obstruction (UPJO). Recently with the advent of improved minimally invasive techniques and equipment, laparoscopic dismembered pyeloplasty (LP) has gained popularity. LP has been offered with the idea that this technique offers superior post-operative recovery especially in the older patient due to decreased traumatic access. We present our experience with a minimally invasive open pyeloplasty.

MATERIAL AND METHODS

A retrospective review of the last 5 years of consecutive open pyeloplasties at

a tertiary children's hospital was evaluated with regard to age, surgical operative time, length of hospital stay, need for post-operative narcotics and surgical success.

RESULTS

79 patients had a dismembered pyeloplasty using an open flank incision. 36 patients (< 1 year), 13 (1-5 years), 8 (5-10 years) and 22 were > 10 years old. Mean surgical time for patients < 1 year was 110.8 minutes, 1-5 years 105.5 minutes, 5-10 years 129.8 minutes, and > 10 years 131 minutes. Incision sizes for the respective groups were 2.13 cm, 1.93 cm, 2.69 cm and 3.38 cm. The last 20 patients under 1 year had incisions between 1-1.5cm. All incisions were an

anterior subcostal muscle splitting approach. All patients received postoperative ketorolac. Supplemental narcotics were not required in any patients less than 10 years old. All patients were discharged in < 23 hours. Radiologic improvement was seen in 76/79 patients with a success rate of 96%

CONCLUSIONS

The minimally invasive approach to open pyeloplasty is a safe and effective treatment choice to address UPJO. The procedure can be easily performed through a small incision without excessive post-operative pain issues which allows for early discharge.

#-56 (SO)

Outpatient pediatric bladder and renal surgeries

D. PRESTON SMITH MD and MARY GJELLUM*
*University Pediatric Urology, Knoxville, USA - * Knoxville, USA*

PURPOSE

Ureteral reimplantations, tapered reimplants, repair of ureteroceles, pyeloplasties, nephrectomies, and laparoscopic renal procedures in children have typically required hospitalization. We have attempted to perform these elective procedures as outpatient surgeries for over 4 years.

MATERIAL AND METHODS

From July 2000 - Sept 2004, 431 elective surgical procedures [206 reimplants, 58 tapered reimplants, 29 ureteroceles/ectopic ureters, 86 pyeloplasties, 36 nephrectomies, and 16 laparoscopic renal procedures (11 nephrectomies, 5 renal cyst ablations)] were performed by a single pediatric urologist in children ages 0.1-19 years ($3.5\text{yrs} \pm 4.1$). Parents were informed of the intent to perform their child's surgery as an outpatient. In

addition to surgical/anesthesia concerns, other indications for overnight stay included < 50 weeks post-conception age (WPCA) and parent preference. As our approach evolved we only offered outpatient procedures to those > 50 WPCA, scheduled the procedure earlier on the day of surgery, and ureteral stents were more commonly used. Parents were extensively educated preoperatively about the possibilities of being discharged with a bladder catheter with internally secured ureteral stents (reimplants),

penrose drains (pyeloplasties), and issues pertaining to early postoperative care.

RESULTS

Three hundred ninety four procedures (91%) were done as outpatients; reimplants (97%), tapered reimplants (90%), repair of ureterocele/ectopic ureter (93%), pyeloplasties (82%), nephrectomies (91%) and laparoscopic renal procedures (91%). There were 37 admissions and only 12 (3%) were deemed

medically necessary (9 surgical, 3 anesthesia). Of these, 8 were discharged the next day. Thus, 427/431 (99%) of all surgeries were outpatients or discharged the next day. Since implementing age requirements, scheduling changes, and increased ureteral stenting 0/159 required admission. Of all 431 procedures, 6 children (1%) were admitted to the hospital within 72 hours following surgery.

CONCLUSIONS

Common elective pediatric urologic surgeries of the bladder and kidney (reimplants, tapered reimplants, repair of ureteroceles/ectopic ureters, pyeloplasties, nephrectomies, and laparoscopic renal procedures) can usually be performed as outpatient procedures. With a few modifications, we provide detailed parental instruction and routinely perform these surgeries as outpatients.

#-57 (PWP)

A modified technique of ureteroplasty for megaureter in children

FRANCISCO OSSANDON, MARIA VICTORIA ROMANINI* and MICHELE TORRE†

CALVO MACKENNA HOSPITAL UNIVERSITY OF CHILE, PEDIATRIC SURGERY, Santiago De Chile, CHILE -

* LUIS CALVO MACKENNA HOSPITAL, PEDIATRIC SURGERY, Santiago De Chile, CHILE - † GIANNINA GASLINI INSTITUTE, PEDIATRIC SURGERY, Genova, ITALY

PURPOSE

Excisional ureteroplasty, proposed by Hendren, has the specific risks of jeopardizing ureteral vasculature and forming leakage from the suture line. The folding techniques are theoretically less prone to these risks, though they have other disadvantages due to the bulky, folded ureter. According to the literature, these two classical approaches have similar complication rates of 5-25%, including stenosis, reflux, and leakage. We have introduced a modified ureteroplasty with the aim of assuring effective reduction in ureteral diameter with minor risks in vasculature.

MATERIAL AND METHODS

42 consecutive patients were operated on between 1994-2004, and then followed-up for 1-9 years. The ureter is opened longitudinally on its less vascularized area. Two parallel longitudinal incisions are performed up to the musculature layer, leaving the adventitia untouched. The inner mucosal aspects laterally to these lines are discarded. The inner layer is closed with a 6-0 running suture. The adventitial layer is closed over with 6-0 single stitches.

RESULTS

This technique, for us, was not more complicated or time consuming than any other ureteroplasty. No leakage, stenosis or reflux were observed. 3 ureters had

persistent dilatation, without obstruction or reflux.

CONCLUSIONS

Our ureteroplasty combines some principles from the classical techniques, with the purpose of reducing the risks and disadvantages of both. We believe our technique complies with: 1) Better preservation of ureteral vasculature because adventitia is preserved untouched; 2) Effective calibre reduction, avoiding the bulking problem; 3) Virtually absent risk of leakage. Our results show that it is a valid option for megaureter correction in children.

Thursday, 16 June 2005: 08:00—09:00

S07: Lower urinary tract

Chairs: U. Sillén, B. Kaplan

#-58 (P)

Acetylcholine in the presence of increased hydrostatic pressure is a mitogen for bladder smooth muscle cells

SANG DON LEE, MD, CEM AKBAL, MD* and MARTIN KAEFER†

Pusan National University Hospital & College of Medicine, Department of Urology, Busan, KOREA, REPUBLIC OF - * Ankara, TURKEY - † Indiana university, dept. of Pediatric Urology, Indianapolis, USA

PURPOSE

Anticholinergic medications represent one important means to oppose the deleterious effects of increased intravesical pressure. Acetylcholine (Ach) functions as a mitogen in many non-urologic organ systems. We evaluated whether acetylcholine in combination with elevated hydrostatic pressure increases human bladder smooth muscle cell (HBSMC) proliferation and whether highly selective anticholinergic medications have the ability to inhibit growth.

MATERIAL AND METHODS

HBSMC were exposed to varying concentrations (10nM-100µM) of Ach in the presence and absence of 40 cm-H₂O

hydrostatic pressure. DNA synthesis was measured using a radio-labeled thymidine incorporation assay. Thereafter, cells exposed to hydrostatic pressure were treated with either 1µM AF-DX 16 (M₂ antagonist), 1 µM 4-DAMP (M₃ antagonist) or 1 µM atropine (Both M₂ and M₃ antagonist) and the effect on proliferation evaluated.

RESULTS

The increase in thymidine incorporation upon exposure to either acetylcholine or elevated hydrostatic pressure alone did not reach statistical significance. However, cells exposed to both stimuli demonstrated a statistically significant increase in thymidine incorporation at Ach concentrations of > 1 µM. Exposure to

antimuscarinic agents resulted in a dramatic decrease in thymidine incorporation in these cells. This effect was most pronounced when the combined M₂/M₃ receptor antagonist was applied.

CONCLUSIONS

Ach acts as a mitogen for HBSMC. This effect is most pronounced at hydrostatic pressures known to increase muscarinic receptor expression. In addition muscarinic receptor inhibition results in a profound decrease in HBSMC growth. This data suggests that anti-muscarinic drugs may prove beneficial in inhibiting long term bladder injury observed in bladder outlet obstruction and neurogenic bladder.

#-59 (P)

The compensating fetal bladder: structure, compliance and contractility following eight days in-utero obstruction

MARIE-KLAIRE FARRUGIA, ADRIAN WOOLF*, MARGARET GODLEY*, DONALD PEEBLES†, CHRISTOPHER FRY‡ and PETER CUCKOW¶

Institute of Child Health and Great Ormond Street Hospital, Nephro-Urology Unit, London, UNITED KINGDOM - * Institute of Child Health, Nephro-urology Unit, London, UNITED KINGDOM - † University College Hospital, Fetal Medicine, London, UNITED KINGDOM - ‡ Institute of Urology and Nephrology, Physiology, London, UNITED KINGDOM - ¶ Institute of Child Health and Great Ormond Street Hospital, Nephro-urology, London, UNITED KINGDOM

PURPOSE

Bladder dysfunction is documented in 75% of children born with posterior urethral valves (PUV), and is implicated in progression of renal failure. Previously our ovine PUV model produced a dilated, hypocontractile bladder from 30 days of

combined urethral and urachal ligation - suggesting decompensation. We hypothesise that 8 days of obstruction will result in a thick-walled, hypercontractile, and therefore compensating, bladder, which is more akin to that found in babies born with PUV.

MATERIAL AND METHODS

At 75 days, male fetal lambs underwent: urachal and urethral (double) ligation (n=3), urachal (single) ligation (n=4) or no ligation (sham) (n=4). Post-mortem was performed at 8 days, with cystometry of the intact fetal urinary tract, followed by

detrusor physiology studies and histology of both bladders and kidneys.

RESULTS

Ultrasound revealed dilated urinary tracts with both single and double ligation by day 7, suggesting urachal ligation alone caused obstruction. Bladders in both groups were significantly thicker and heavier but were not dilated. While compliance curves from shams were

consistent, those from ligated bladders showed greater variability. Detrusor contractility was nerve-mediated and mainly cholinergic, and this was significantly greater in double than in single ligated bladders.

CONCLUSIONS

In our PUV model, single ligation (of the urachus alone) at mid-gestation is

obstructive despite a "patent" urethra. Eight days of double ligation produces a thick-walled, hypercontractile, low volume bladder - suggesting an earlier, compensated phase of obstruction. Fetal urodynamics will subsequently identify the time-frame of bladder compensation-decompensation.

#-60 (PWP)

The use of perineal urethroplasty for bulbar and membranous urethral strictures in children and adolescents

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Hadassah Hebrew University Medical Center, Urology, Jerusalem, ISRAEL

PURPOSE

Perineal urethroplasty is the best treatment for bulbar and membranous urethral strictures in adults. It is not as clear, if this holds true in pediatric patients since the literature addressing this question is scant. Our goal was to examine the safety and efficacy of perineal urethroplasty in children and adolescents.

MATERIAL AND METHODS

We retrospectively reviewed our urethroplasty database to identify patients operated on between the ages of 1-13 (children) and 13-18 (adolescents).

RESULTS

14 patients treated by perineal urethroplasty were identified. 5 of them were children (mean 10.8years) and 9 adolescents (mean 16.7years). 7 had membranous and 7 bulbar urethral strictures. Membranous strictures were secondary to pelvic fractures. Bulbar strictures were "idiopathic" in 57%, traumatic in 29% and secondary to hypospadias in 14%. All bulbar strictures were previously treated for 2.5 years on average (0.5-7), by repeated dilations which failed. Using the perineal approach, 79% of these young patients underwent anastomotic urethroplasty, tissue transfer techniques were used in the remainder. Mean follow up was 20 months (12-54). Surgery was successful in 93% of the patients. Mean maximal urinary flow

increased from 2.65ml/sec. preoperatively to 27.65ml/sec. at last follow up. There were no significant complications, and success was similar in the children and adolescent groups.

CONCLUSIONS

In pediatric patients, bulbar and membranous strictures may be treated successfully by perineal urethroplasty. These patients should probably not be treated "conservatively" by urethral dilation. Longer follow-up is needed to confirm that these good results are maintained as these patients cross into adulthood, especially those operated on before puberty.

#-61 (LO)

Posterior urethral valves: the correlation of renal status and GFR at 16 months with bladder function, urinary incontinence and GFR at 5 years of age

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PURPOSE

Early presentation and incontinence at age 5 years are reported to correlate with poor long-term renal outcome. Clinical

presentation of PUV has altered with pre-natal diagnosis. We have examined correlations with GFR in a contemporary valve population.

MATERIAL AND METHODS

50 boys (30 prenatal) presenting after 1994 were prospectively studied (age 5 years): GFR (Cr51 EDTA C-slope clearance)

was correlated with 1)renal status at the outset (imaging), 2)VUR (IRC), 3)daytime incontinence, 4)bladder function (video-urodynamics), 5)GFR at 16-months (n=42)

RESULTS

Bladder function was either normal (n=20), compensated (n=20) or decompensated (n=10). Comparing the three groups, there was no difference in GFR at 5 years (ANOVA, p=0.7) nor in the progression of GFR between 16 months

and 5years (Paired t-Test, $p \geq 0.3$). Similarly there was no difference in GFR comparing those with (n=17) and without daytime incontinence ($p > 0.5$). At the outset kidneys were either normal (n=9; no VUR), unilaterally abnormal (n=18, 4/8; 50%; with resolving VUR), bilaterally abnormal (n=23, 10/15; 33%; with resolving VUR). The GFR was significantly different between these groups. ($p < 0.001$; Means, ml/min corrected; 103, 98 and 50 respectively.) Persistent VUR had no effect on GFR or bladder function.

CONCLUSIONS

At Age 5-years: Renal status at the outset correlates with GFR and is independent of bladder function. Daytime incontinence is not associated with poor renal or bladder function. The presence of at least one normal kidney is associated with a normal GFR. VUR resolution is similar to that of children with primary VUR. Persistent VUR has no effect on renal or bladder function

#-62 (SO)

Boys with posterior urethral valves, outcome concerning renal function, bladder function and paternity after 31-44 years

GUNDELA HOLMDAHL and ULLA SILLÉN*

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PURPOSE

The short-term prognosis in boys with posterior urethral valves (PUV) has improved in recent decades, but the long-term prognosis in terms of renal and bladder function and fertility is still a matter of great concern. This study is a follow-up of boys with PUV treated in 1956-1970 at the Children's Hospital, Göteborg.

MATERIAL AND METHODS

The records of 54 boys treated for PUV were reviewed. Of 27 boys with PUV and upper urinary tract dilation, five boys

(18%) died at an early age and three boys were lost to follow-up, leaving 19 to be included. At the follow-up all answered a questionnaire.

RESULTS

Of the 19 men, 32% were uremic and 21% had moderate renal failure (10% and 26%, respectively during adolescence) and 47% had not been checked since adolescence. Bladder dysfunction with symptoms of detrusor weakness with emptying difficulties was seen in 40% (all in the abnormal renal function group). All but two of the non-uremic men stated that

they had fathered children but none of the uremic men.

CONCLUSIONS

This long-term follow-up study emphasizes the importance of checking renal and bladder function also in adult men who have the PUV diagnosed early in life, since there seems to be a renal deterioration also in adult life combined with a high proportion of bladder dysfunction. Paternity seems to be connected to the general health of the men and not to the congenital malformation.

#-63 (SO)

Efficacy of ddavp treatment in posterior urethral valve patients with polyuria

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PURPOSE

To evaluate the effect of desmopressin treatment on urine volume, density and GFR in patients with PUV and the factors affecting the response to this treatment.

MATERIAL AND METHODS

Sixteen patients who underwent valve ablation were included. All were polyuric (a urine output more than 30 ml/kg/day) and had hypoosmolar urine (urinary density of 1015 or lower). Daily fluid intake, urine output,

GFR, blood chemistry and ADH levels of the patients were recorded before treatment. Following 5 days of observation, patients were given DDAVP orally with a dosage of 0.4 mg/day, b.i.d. After 7 days and 3 months period of treatment, all laboratory tests were repeated and voiding characteristics were re-evaluated.

RESULTS

The mean age of 16 patients was 6.8 years (range 2-11). The mean age at valve ablation was 20.7 months (range 5-72). The mean daily urine output during first week and at the third month of the treatment decreased significantly ($p=0.004$, $p=0.006$). There was increase in night-time and day-time urine density in 10 patients (62%) and 13 patients (81%) respectively at the third month evaluation. Increments in urine density

were statistically significant for the third month evaluation. Nine (56%) patients had normal ADH levels ($<7\text{pcg/ml}$) and seven patients had higher levels. There was no statistically significant difference between pretreatment and posttreatment micturation characteristics.

CONCLUSIONS

Desmopressin treatment improves polyuria in PUV patients. The responses

are better particularly in PUV patients with significant bladder dysfunction. The DDAVP treatment improves the day-time urine density rather than the night-time in PUV patients. Combination of DDAVP treatment with overnight catheterization may be a good alternative that needs to be evaluated by further prospective randomized studies.

#-64 (SO)

The effect of continuous overnight mitrofanoff drainage in the un-augmented valve bladder

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Birmingham Children's Hospital, Paediatric Urology, Birmingham, UNITED KINGDOM

PURPOSE

Progressive upper tract dilatation seen in valve bladder syndrome is associated with deterioration in renal function. We present our experience with continuous overnight drainage in boys with valve bladder syndrome, who have not undergone bladder augmentation.

MATERIAL AND METHODS

An ambispective study of boys with valve bladder syndrome was performed using case note review and follow-up outpatient assessment that included measurement of

serum creatinine, overnight urine volumes and urine osmolality.

RESULTS

Between September 1996 and January 2004, thirteen boys, with valve bladder syndrome, have undergone Mitrofanoff formation to improve both day and night time drainage. The median (range) age at operation was 104 (39-180 months) and the median follow-up 48.5 (11-58 months). The estimated GFR (Haycock-Schwartz formula derived) before Mitrofanoff was 58.4 (16.9-110) ml/min/1.73m² and at most recent review 47.3 (11.6-116) ml/min/1.73m². Median overnight urine

output was 1,000mls (400-1,800) and urine osmolality 267 (187-490) mosmol/kg. Upper tract dilatation improved on ultrasound in all patients. Two patients (15%) developed end-stage renal failure; one has undergone live-related renal transplantation and the other is receiving haemodialysis.

CONCLUSIONS

Continuous overnight Mitrofanoff drainage improves upper tract dilatation in boys with valve bladder syndrome and renal function was maintained in the majority of patients.

#-65 (PWP)

A case series of nephrogenic adenoma of the bladder and urethra

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PURPOSE

To present 4 cases of paediatric nephrogenic adenoma (NA), including 2 bladder and 2 urethral cases and discuss their diagnostic and management features in the context of differential diagnosis and natural history.

INTRODUCTION

NA is a rare benign tumour of the urinary tract and is found most commonly in the bladder. It is thought to represent a metaplastic response to tissue injury or inflammation, caused by surgery, trauma, or recurrent infection. It is an important differential diagnosis of any tumour found in the urinary tract.

PATIENTS

A 3 year old girl presented with recurrent UTI and haematuria. She had undergone a previous hemi-nephro-ureterectomy. An ultrasound scan a year later suggested a large bladder tumour, which was biopsied cystoscopically, and histology confirmed NA. She underwent open resection of the tumour. A 4 year old girl

presented with recurrent UTI and previous bilateral duplex ureterostomies and subsequent trans-uretero-ureterostomy with ureteric re-implantation. A cystoscopy 9 months later showed a papillary tumour which was confirmed as NA on histology. An 11 year old boy presented with haematuria and dysuria and no other relevant history. At urethroscopy a ragged circumferential area biopsied in the bulbar urethra showed NA. A 7 year old boy presented

with haematuria and no other relevant history. At urethroscopy a circumferential inflamed nodular area was biopsied and NA confirmed. The urethral cases have some persistent symptoms, and are being observed.

CONCLUSIONS

The bladder cases presented with symptoms related to the cause and the

tumour, whereas the urethral cases had no identifiable predisposing factor. Treatment for the bladder cases consisted of endoscopic and open ablation of the tumours and recurrences. The condition resolved in the bladder cases in keeping with those previously reported. The urethral cases were biopsied, but not ablated, to reduce the risk of stricture formation. 25 bladder and 2 urethral cases of NA have been previously reported in children.

#-66 (LO)

Klippel-Trenaunay syndrome: treatment of genitourinary sequelae

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PURPOSE

Prior reviews on the GU manifestations and complications of Klippel-Trenaunay syndrome (KTS) have used data accumulated from diverse specialty specific publications. It is our hypothesis that this resulted in a significant misrepresentation of the frequency and severity of its urologic sequelae.

MATERIAL AND METHODS

A review of KTS patients (pts) managed at our institution between 1970 -2004 was performed. Data was collected regarding its GU manifestations and their complications.

RESULTS

214 pts with KTS were evaluated, 30% (62/214) had cutaneous (7% -14 pts), visceral (7%-14 pts) or both cutaneous and visceral GU hemangiomas (16%-34 pts). Twenty-nine percent (14/48) of the patients with cutaneous genital involvement developed intractable bleeding. Electrical/laser cauterization was performed in all and was successful in 21% (3/14). Excision of the hemangiomas became necessary in 71% (11/14), average blood loss of 1500 cc, range, 100-5,000cc. Thirty-nine hospitalizations for hematuria occurred in 8% (17/214) of the pts. Hematuria was from the bladder in 10, the urethra in 4 and the kidney in 3. All were treated with conservative measures including chemical cauterization (alum), 4/17 (24%) stopped their bleeding. Refractory hematuria was

successfully treatment with electrical/laser cauterization in 40% (7/17); 12%(2/17) were managed by repeated angiographic embolizations; 24% (4/17) eventually required open surgical extirpation of the bleeding site, average blood loss 5,500 cc, range 3,000-7,500 cc

CONCLUSIONS

The incidence of GU manifestations of KTS is 30%. We recommend conservative management of its urologic complications, however, this is frequently unsuccessful and rather heroic surgical procedures may be required.

#-67 (V)

The Monfort technique for abdominal wall reconstruction, orchidopexy and elective appendicovesicostomy in the management of the prune-belly syndrome

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PURPOSE

The prune-belly syndrome consists of a triad of abnormalities, including deficient abdominal wall musculature, bilateral cryptorchidism and variable

amounts of dilatation of the urogenital tract. The past 30-40 years has certainly seen significant improvement in the management of virtually every aspect of the prune-belly syndrome and its uropathy. Early transabdominal orchidopexy and modern abdominal wall-

plasty clearly have merit. Considering the risk of post-void residual volume and the fact that aggressive bladder and ureter reconstruction are not primarily recommended our concept is to perform elective appendicovesicostomy associated with abdominoplasty and

orchidopexy. We present our results in correcting the abdominal wall defect in patients with the prune-belly syndrome using the Monfort abdominoplasty.

MATERIAL AND METHODS

Three patients underwent Monfort abdominal wall reconstruction. This technique preserves the umbilicus, and strengthens, flattens and thickens the abdominal wall. It produces a narrow-

waisted more normal physique and provides excellent transperitoneal exposure for concomitant genitourinary reconstructive procedures. The elective Mitrofanoff is an easy step in association with the abdominoplasty and can avoid future urinary tract deterioration.

RESULTS

There were no early postoperative complications and all patients and parents

are satisfied with the outcome with an obvious improvement in self-esteem.

CONCLUSIONS

The Monfort technique is an excellent approach and produces an excellent cosmetic appearance. The elective Mitrofanoff represents limited additional morbidity to the procedure and allows objective evaluation of the voiding function

Thursday, 16 June 2005: 09:00—09:30

S08: Oncology

Chairs: W. Rösch, M. Ritchey

#-68 (P)

Expression of COX-2 in Wilms' tumor: immunohistochemical study using TMA methodology

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PURPOSE

Cyclooxygenase (COX)-2 has been shown to play a role in modulating cell growth and development of several human neoplasms. Regulation of COX-2 expression by several growth factors, like EGF/ErbB2, has been demonstrated. Relationship between the incidence of cancer and COX-2 expression has been observed as well as significant anti-tumor properties of its inhibitors. Expression of COX-2 has not been studied in Wilms' Tumor (WT).

MATERIAL AND METHODS

Tissue microarray (TMA) multitissue block was prepared from 14 samples of WT (each from a different patient), xenografts derived thereof, and from normal human lung, liver, and renal cortex and medulla

tissues (as controls). Each sample was presented in the block by 3-4 cores, 0.06 mm in diameter. After serial slicing, of 4µm thickness, the histological slides were stained with H&E and immunostained with anti-COX-2 antibodies. The immunostaining was graded semi-quantitatively by percent of stained cells with cytoplasmic pattern of staining and according to the intensity of staining. The results were compared to the immunostaining results obtained by using anti-erbB2 antibodies on the same samples.

RESULTS

All the authentic human pathological samples, except one anaplastic WT, as well the WT xenografts, expressed COX-2 in all cellular components of WT. Expression was also observed in WT lung

metastasis and in tumors which over-grew chemotherapy. Expression of COX-2 in normal kidneys was confined to the tubular epithelium, both in the cortex and medulla, and to the sinusoidal cells in normal liver. No expression of COX-2 was detected in normal lung.

CONCLUSIONS

Expression of COX-2 is characteristic of all WT tumors stages and is in correlation with the pan-expression of the erbB2 receptor in these tumors. Since we have already demonstrated a therapeutic effect of the anti-erbB2 antibodies in WT xenografts, and since COX-2 is downstream of the erbB2 receptor, the potential therapeutic role of COX2 inhibitors should be evaluated in WT.

#-69 (P)

Myogenin and desmin immunohistochemistry in the assessment of postchemotherapy genitourinary embryonal rhabdomyosarcoma: prognostic and management implications

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PURPOSE

The presence of definite areas of residual undifferentiated embryonal rhabdomyosarcoma (eRMS) post genitourinary (GU) eRMS treatment indicates residual / recurrent disease. The

clinical significance of scanty positive desmin and myogenin staining cells in resected specimens and surveillance biopsies which appear 'undifferentiated' on light microscopy is unknown. We reviewed our retrospective experience of GU eRMS to examine the relationship between presence of immunostained

'undifferentiated' cells and clinical course.

MATERIAL AND METHODS

The histopathological findings of 12 children with biopsy proven localised GU

eRMS on the initial resection / post treatment biopsy were reviewed and all specimens were immunostained with desmin and myogenin to detect residual 'undifferentiated' rhabdomyoblasts. The relation between histopathological findings and outcome was determined.

RESULTS

Eleven showed of well-differentiated post treatment rhabdomyoblasts on H&E staining, with margins apparently free of tumour, and one showed no morphological

evidence of residual RMS. All demonstrated at least scanty desmin and myogenin positive cells. Four had no further treatment nor recurrence at 10y(8-13) post treatment. Eight had further treatment followed by further resection in three. One patient died from her disease but seven remain alive and well at 7.2y(8m-13y)

CONCLUSIONS

In some cases the presence of 'undifferentiated' myogenin / desmin

positive cells in post treatment GU eRMS is associated with clinical disease recurrence, whilst others, have no clinical sequelae even in the absence of further treatment. In GU eRMS close and regular clinical surveillance is essential, and the use of desmin / myogenin immunohistochemistry to detect scattered 'undifferentiated' cells does not appear to provide useful prognostic information in an individual case.

#-70 (SO)

Does the less aggressive multimodal approach of bladder-prostate rhabdomyosarcoma preserve bladder function?

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PURPOSE

The treatment of bladder-prostate rhabdomyosarcoma has evolved into multimodal therapy. Despite this less invasive approach, some authors described bladder dysfunction in all patients receiving radiotherapy. The aim of this study is to evaluate urinary dysfunction in children submitted to this modality of therapy in our institution.

MATERIAL AND METHODS

We evaluated 10 children treated in our institution from 1999 to 2003 according to IRS-IV criteria. All patients were submitted to anamnesis and multichannel urodynamic study at least 6 months after treatment.

RESULTS

Two patients were excluded from the study, one boy because of local recurrence and need for salvage surgery; and another one due to cranium encephalic trauma during the course of the treatment. In the series of 8 patients only one needed surgery due to disabling dysuria. The results are shown in Table 1.

Table 1

Sex	Age (y.o.)	Histology	Location	Clinical Stage	Pelvic RTx (cGy)	Last Treatment (mo)	Symptoms	Urodynamic findings
M	3	Embryonic	Bladder	III	3990	6	None	Normal
M	3	Botryoid	Bladder	III	4050	9	None	Normal
F	5	Embryonic	Bladder	III	3000	10	Frequency	Reduced bladder capacity, pain during filling, post-void contraction
F	4	Botryoid	Bladder	III	4500	16	Disabling dysuria	Dysuria
M	9	Embryonic	Bladder + prostate	III	4500	20	Frequency	Reduced bladder capacity, sensitive urgency
M	4	Botryoid	Prostate	III	4500	21	None	Normal
F	9	Embryonic	Bladder	III	4500	33	Dysuria	Reduced bladder capacity, sensitive urgency
F	8	Embryonic	Bladder	IV	4500	39	Nocturnal enuresis	Reduced bladder capacity, sensitive urgency, post-void contraction

CONCLUSIONS

The question remained was if bladder anatomical preservation maintains sufficient function for a normal life.

Herein in our series of 8 patients, we found 3 with normal urinary function and 4 with tolerable minor alterations. In only one patient cystectomy and urinary diversion was late necessary due to

a disabling dysuria. The fact that 7 out of our 8 patients remained the original functional bladder suggests the feasibility of this approach, although longer follow up is needed.

#-71 (SO)

Laparoscopic nephrectomy for Wilms' tumor after chemotherapy: initial experience

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PURPOSE

Treatment of unilateral Wilms' tumor includes chemotherapy followed by radical nephrectomy. Herein we describe the results of laparoscopic radical nephrectomy.

removed through Pfannenstiel incision. The cavity is reviewed, the trocars removed and incisions closed, without drains. The patients were evaluated regarding complications, the pathological results reviewed.

contamination of perirenal fat and surgical margin in one. All others had viable tumor cells, but the tumor was totally resected. No patient presented lymphatic metastasis. All patients received further chemotherapy and remain free of disease for 6+ to 13+ months.

MATERIAL AND METHODS

Seven children, mean age 3.7 ys., underwent transperitoneal nephrectomy with four ports. After evaluation of the cavity, the colon is mobilized, exposing the renal vessels and ureter, that are isolated and sectioned. The kidney, perirenal fat and adrenal are dissected en-bloc. When liberated, the specimen is mobilized to allow lymphadenectomy. The specimens are inserted in a bag and

RESULTS

There were no complications, transfusion or tumor rupture. In one patient, the tumor had adhesions to the liver, being successfully separated with harmonic scalpel. The postoperative period was uneventful in all cases, except for abdominal distension in one. The patients were discharged in the second or third postoperative day, without analgesics. Histopathology revealed complete tumor necrosis in two patients, with

CONCLUSIONS

Laparoscopic nephrectomy for Wilms' tumor is feasible and safe after chemotherapy. It reproduces all steps of open surgery, but presents better cosmesis, less pain and shorter hospital stay. A longer follow-up is needed, and more cases are necessary for comparison with open surgery.

#-72 (V)

Excision of intracaval Wilms' tumor on cardiopulmonary bypass

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PURPOSE

Intravascular extension of Wilms tumor has been reported at 4.1%. A series of case reports have described the management of Wilms tumor with intra atrial extension with only one multi institutional study investigating outcomes within NWTs-4. We review our experience with cardiopulmonary bypass in the management of Wilms tumor with

extension of tumor thrombus into the right atrium.

MATERIAL AND METHODS

A retrospective review of all operative cases from 1993 to 2003 identified all patients that underwent Wilms nephrectomy with the assistance of cardiopulmonary bypass. These charts were reviewed and analyzed for patient

demographics, disease classification, renal function, surgical operative technique, incidence of complications, and outcomes. Details of the surgical technique are described.

RESULTS

Four patients were identified with Wilms tumor that after preoperative chemotherapy had evidence of tumor

extension into the right atrium by CT scan. Median age of diagnosis was 39 months (range 30-53). One case was bilateral, two 2 right-sided tumors, and 1 left sided tumor. All children underwent nephrectomy and thrombectomy under cardiopulmonary bypass support. Median time on bypass was 90 minutes (range 47-127 minutes). Blood loss could not be estimated due to use of the bypass pump. The inferior vena cava was opened in all cases and subsequently repaired

with a bovine pericardial patch. There was no evidence of postoperative renal insufficiency as monitored by plasma creatinine levels. Complications included pleural effusion (n=2), pericardial effusion (n=1), gross hematuria (n=1), and ileus (n=2). Three children have no evidence of disease on follow up while one has local recurrence after post operative chemotherapy and radiation.

CONCLUSIONS

Though immediate post operative complications were observed in association with the use of bypass, no long term sequelae have been identified. This technique is a safe approach to dealing with intra atrial Wilms extension. It is important to consider a multidisciplinary surgical approach to complex cases of Wilms tumor.

Thursday, 16 June 2005: 09:30—10:30

S09: Imaging

Chairs: E. Stokeland, E. Kass

#-73 (P)

The renal mass index: an objective method of diagnosing hydronephrosis to supplement or replace grading

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PURPOSE

Present a quantitative, therefore objective, measure of hydronephrosis that can be used as standard to replace various grading systems currently being used. There is no standard method of grading hydronephrosis. The Society for Fetal Urology has four grades (Ped.Rad.23:478,1993). Children's Hospital of Boston uses 5 grades for hydronephrosis (J.Urol. 168:2177,2002). A single system for evaluating hydronephrosis, such as that proposed, would provide a standard measurement method that would allow better communication. Furthermore, if this method is quantified, then it will provide an objective measure. Ideally the

procedure for quantification should be sufficiently automated to be less operator and clinic dependent. A method for calculating renal mass index (RMI) which accomplishes this is: $RMI \text{ as } \% = 100 \times \frac{\text{Total area of the kidney minus area of dilated pelvis and calices}}{\text{Total area}}$

MATERIAL AND METHODS

The RMI was evaluated for 50 consecutive cases of hydronephrosis found on ultrasound. These calculations were performed by our trained sonographers using an Accuson ultrasound machine in our Sacramento clinic after the appropriate areas had been outlined.

RESULTS

Percentage figures correlated well with grading. With experience, the grading system could be replaced altogether. The RMI was objective and reproducible by different operators viewing the same ultrasound studies and it was found to be independent of the magnification scale used. It was also used for diagnosing renal scarring after pyelonephritis.

CONCLUSIONS

The RMI is an objective measure of the degree of hydronephrosis and should prove useful as a supplement to or for replacement of the grading system.

#-74 (LO)

BOLD MRI: a non-invasive technique for tissue pO₂ assessment applied to the obstructed kidney

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PURPOSE

Urinary tract obstruction is a common disorder during both childhood and adolescence. Blood oxygenation level dependent (BOLD) magnetic resonance imaging (MRI) provides a measure of deoxyhemoglobin content. Thus, BOLD MRI is an indirect measure of oxygen partial pressure (pO₂). The purpose of this study was to examine the relationship between the apparent relaxation rate (R2*) in the kidney, measured by BOLD

imaging, and simultaneously measured absolute values of pO₂ by an oxygen sensitive microelectrode placed in the renal tissue. Secondly, intrarenal pO₂ levels were measured during and after release of unilateral ureteral obstruction (UUO).

MATERIAL AND METHODS

Danish Landrace pigs were used and oxygen sensitive microelectrodes were inserted into renal parenchyma. Different

arterial and intrarenal levels of pO₂ were obtained by stepwise changing the percentage of the respirator supplied oxygen-to-nitrogen ratio. The pigs were subjected to 24 h UUO by closing a catheter inserted through the mid-ureter with the tip placed in the renal pelvis.

RESULTS

When the inhaled oxygen fraction was 5-70%, R2* was approximated to vary

linearly with pO₂ levels (cortex: $\Delta R2^*/\Delta pO_2 = -1.2 \text{ ms-1kPa-1}$ and medulla: $\Delta R2^*/\Delta pO_2 = -1.7 \text{ ms-1kPa-1}$), indicating that reduction in arterial pO₂ levels predominantly affects the amount of medullary deoxyhemoglobin. UUO caused a marked reduction in medullary pO₂ ($1.9 \pm 1.1 \text{ kPa}$ vs $4.1 \pm 0.6 \text{ kPa}$, $P=0.032$),

which normalized after release of obstruction ($3.3 \pm 1.2 \text{ kPa}$ vs. $4.2 \pm 0.7 \text{ kPa}$, N.S.).

CONCLUSIONS

BOLD MRI provides reliable non-invasive estimates of renal oxygen content and the technique may provide a useful additional tool in the diagnostic strategy in cases with suspected ureteral obstruction.

#-75 (LO)

Magnetic resonance imaging in evaluating outcomes of pediatric pyeloplasty

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PURPOSE

Magnetic resonance imaging (MRI) is useful in evaluating children with hydronephrosis because it delineates urinary tract anatomy, calculates renal function (and GFR), and accurately assesses obstruction in one study without ionizing radiation. To date, there is no study comparing MRI findings in children before and after pyeloplasty for UPJ obstruction. The purpose of our study was to evaluate gadolinium enhanced MRI to assess the radiographic outcomes in children undergoing pyeloplasty.

viewed to assess perfusion, parenchymal enhancement, and contrast excretion for each kidney. Kidney volume and GFR indices were used to calculate differential renal function. Signal intensity versus time curves were generated and renal transit times (RTT) were compared. Obstruction was defined morphologically as a persistent narrowing of the ureter with dilatation proximally, and functionally by delayed RTT (> 8 min) and decreased relative renal function (RRF).

seen following pyeloplasty (18.25 minutes preop vs. 5.74 minutes postop); Mean renal length of the obstructed kidneys was 7.53 cm preoperatively and 7.90 cm postoperatively ($p = 0.022$); mean length of the normal kidneys was 6.42 cm preoperatively and 7.00 cm postoperatively ($p = 0.002$). RRF, GRF indices and cortico-medullary cross-over points improved in all patients postoperatively.

MATERIAL AND METHODS

Our MRI protocol was based on techniques used in nuclear medicine. Furosemide was given 15 minutes prior to contrast medium administration. Dynamic sequences were

RESULTS

A total of 18 patients had MRIs before and after surgery. Mean age was 1 year (3 months to 10 years). All patients had dismembered pyeloplasties. Only 2 patients underwent intraoperative retrograde pyelograms. A statistically significant ($p=0.001$) decrease in RTT was

CONCLUSIONS

MRI provides superior anatomic and functional information in one study without ionizing radiation. MRI will likely become a new gold standard in the evaluation of hydronephrosis and in the pre- and postoperative evaluation of obstructive uropathy.

#-76 (P)

Preliminary study of the predictive value of MRI for histological lesions in severe obstructive uropathy

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PURPOSE

URO-MRI has been recently considered to define the anatomy of difficult cases of obstructive uropathy. has not been yet

proved. To assess the predictive value of MRI for histological lesions, we compared the MRI image findings and functional evaluation with the histological lesions associated with obstructive uropathy

MATERIAL AND METHODS

Between 2001 and 2003, 64 children with obstructive uropathy had URO- MRI. Eleven children had available renal

specimens for analysis after total or partial nephrectomy. A radiologist independently the URO-MRI. The morphological features of the parenchyma in all, and the functional evaluation in 4 were analyzed. Nuclear renal scans were reviewed. A pathologist reviewed independently the specimens, describing seven histological categories

RESULTS

MRI defined the type of uropathy and correlated with the final surgical diagnosis

in all cases. MRI showed morphological aspects of severe parenchymal lesions in 10 cases. At least one of the histological lesions was affecting more than 50% of each of the 10 specimens. The loss of corticomedullary differentiation at MRI was correlated with loss of parenchyma architecture in histology. In one case the MRI showed conserved corticomedullary differentiation, the histology showed conserved architecture with presence of all the types of lesions less than 25% and a normal number of glomeruli. The MRI

functional evaluation results correlated with nuclear scan

CONCLUSIONS

URO-MRI provides at the same time a perfect definition of the anatomy of obstructive uropathy and may give an estimation of the residual function in the renal parenchyma. Our preliminary results need further studies with bigger series to confirm statistical significance

#-77 (PWP)

Functional and morphological evaluation of antenatally detected urinary tract dilatation with dynamic magnetic resonance urography

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PURPOSE

Purpose of this study was to investigate the use of MR urography in neonates to detect the antenatally diagnosed dilated urinary tract system.

when available, conventional urography, diuretic renal scintigraphy (DRS) or surgery. Follow-up was at least 2,5 years.

RESULTS

MR image quality was considered good in all kidney-ureter units. For split renal function, dynamic MR urography and DRS showed strong agreement with concordant classification. MR was able to find 1 normal kidney more than postnatally made US (3 vs. 2). 9 hydronephroses depicted in postnatal US (6 ureteropelvic (PUJO) and 3 ureterovesical (UVJO) obstructions) showed in MR 8 hydronephrosis (6 PUJO and 2 UVJO) and the diagnosis after follow-up or surgery turned to be 3 PUJO, 3 UVJO,

1 vesicoureteral reflux and 1 duplex ureter with ureterocele. Both US and MR studies showed 1 polycystic kidneys and 6 multicystic kidneys. 1 out of 2 renal aplasia found in postnatal US turned to be renal hypoplasia.

CONCLUSIONS

Combined static-dynamic MR urography performed without anesthesia, provides high-quality depiction of the urinary tract in infants, while allowing imaging of anatomy and reliable measurement of renal function and urinary excretion. MR urography alone was found to be comparable with conventional combination studies of DRS and US or urography.

#-78 (SO)

The role of renal resistive index measures in the diagnostic work-up of congenital hydronephrosis

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PURPOSE

To evaluate the role of Doppler derived renal resistive index measures (RI) in the diagnostic work-up of congenital hydronephrosis.

MATERIAL AND METHODS

Seventeen neonatal pigs were randomized to either left sided partial unilateral ureteral obstruction (n = 12) or sham operation (n = 5) at 2 weeks of age. Serial

investigations including B-mode ultrasound, RI measures and combined clearance/renographic evaluations were performed at 4, 12, 24 weeks of age under light sedation. Results were analysed statistically, and Receiver operating

characteristic (ROC) curves were generated in order to evaluate the diagnostic efficacy of RI and Δ RI (inter-renal RI difference) in discriminating between obstructed and non-obstructed systems.

RESULTS

In all 15 animals completed the study protocol. In the obstructed group, hydronephrosis and significant renal

function compromise developed on the left side, mainly at the ages of 4 and 24 weeks. Sham operated pigs had stable renal morphology and function throughout the study. There were however no significant differences in RI or Δ RI between the two groups at any age nor were there any significant differences between right and left RIs in the obstructed group at any point. RI and Δ RI had no viable diagnostic capability as judged by ROC curve analysis.

CONCLUSIONS

RI and Δ RI were not affected by partial unilateral ureteral obstruction induced in the immature porcine kidney. The results of this study do not support the clinical use of Doppler ultrasound studies in the diagnostic work-up of congenital hydronephrosis, and may suggest a fundamentally different renal hemodynamic response to obstructions induced in the immature kidney.

#-79 (P)

Correlation between ultrasound bladder measurements and urodynamic findings in children with urinary tract infection

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PURPOSE

To develop a non-invasive method, we evaluate the role of ultrasound (US) estimated bladder parameters for the assessment of bladder dysfunctions, and to compare it with the urodynamic findings (UD) in infants and children with urinary tract infection (UTI).

MATERIAL AND METHODS

At entry, each patient had ultrasonogram (US) and both natural filling (NFC) and conventional filling (CFC) cystometric studies. Bladder Volume and Wall Thickness Index (BVWI) was calculated based on US studies and bladder pattern was classified as, thick (BVWI < 70), normal (BVWI 70-130) and thin (BVWI > 130) as previously reported. The criteria for diagnosing urodynamic

bladder patterns included normal, unstable, and decompensate as reported previously. Correlation between the US measured parameters and UD findings were then evaluated.

RESULTS

Sixty one children (M/F 38/23, mean age 4.82) were selected. When BVWI correlated with patients UD findings, 86% of the patients with normal bladder pattern showed BVWI normal. For patients with unstable bladder pattern, 82% had BVWI < 70. Among children with decompensate bladder, 67% had BVWI > 130. Mean bladder volume (CFC) was less in children who had BVWI < 70 compared to the children BVWI normal and those with BVWI > 130 ($56.74 \pm 32.3\%$ vs $86.31 \pm 23.8\%$ vs $96.45 \pm 31.8\%$ respectively, $P < 0.001$). Moderate or

severe detrusor instability was detected in 83% of the children who has BVWI < 70, compared to 12.5% and in 11.1% of children who had BVWI normal and BVWI > 130, respectively ($P < 0.001$). High voiding detrusor pressure was significantly associated (84.56 ± 21.25) in those children who had BVWI < 70 compared to 50.31 ± 15.37 in normal and 58 ± 12.19 in children with BVWI > 130.

CONCLUSIONS

US measured bladder parameters correlated very well with the UD findings in patients with urinary tract infection. Our study confirmed BVWI can be employed as a reliable guide for the appropriate choice of further invasive UD studies.

#-80 (PWP)

Development of an examination chair for ultrasound of the kidneys and bladder

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PURPOSE

Traditional imaging of vesicoureteral reflux relies on artificial bladder filling.

Transurethral catheterisation creates discomfort to the patient and reflex contraction of the bladder neck may produce abnormal findings. We developed

an examination chair that allows imaging of the bladder and kidneys without direct contact between patient and ultrasound transducer.

MATERIAL AND METHODS

We designed an examination chair for contemporaneous long term-examination of the bladder and both kidneys. The child is accommodated on two fluid filled cushions while kidneys and bladder are examined by 2 ultrasound transducers. Images are registered on a video tape. One transducer registers transverse sections of both kidneys. The second transducers monitors the bladder and pelvic floor.

RESULTS

Preliminary results indicate that long-term contemporary visualisation of the bladder and both kidneys is possible with our chair. Patients scheduled for miction-cysturethrography in our clinic are currently studied.

CONCLUSIONS

Imaging of the bladder and kidney is possible with our new examination chair. Patient discomfort is minimized and bladder filling and emptying is studied under almost physiologic conditions. Because indications for operative treatment are decreasing, less invasive methods for the detection of reflux should be inve

#-82 (SO)

Ultrasound imaging of the sacral reflexes

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PURPOSE

To enhance the ability to answer questions of neurologists and neurosurgeons whether a child does or does not has a neuropathic bladder dysfunction.

the puborectal and external sphincter, in males, were recorded.

Controls: 20/20 had normal reflex activity both on coughing and tapping.

RESULTS

DV: 28/30 had normal reflex action of the puborectalis muscle on abdominal tap. Two non-reflexing patients had unexplained lazy bladder syndrome and were on cic. 26/30 had a normal reflex on coughing. The 2 extra non-reflexing patients could not be assessed because of hypermobility of the bladder neck on coughing and had normal reaction on abdominal tapping. SB: Of all patients, 2/20 had some puborectalis activity on coughing or tapping.

CONCLUSIONS

The question whether a child suffers from non-neurogenic or neuropathic bladder/sphincter dysfunction is often difficult to answer by urodynamic studies alone. Dynamic ultrasound recording of the S-2-3 reflex arches provides additional information and can be of great help to decide on neurosurgery of a tethered spinal cord.

MATERIAL AND METHODS

Thirty patients with dysfunctional voiding (DV), 20 spina bifida patients (SB) and 20 controls had a dynamic ultrasound of the pelvic floor while coughing and when being tapped on the abdominal wall. The reflex action of the puborectalis muscle, in females, and the combined action of

#-83 (PWP)

Real-time three-dimensional (4d) ultrasound imaging of the clitoris

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PURPOSE

The clitoris is a poorly understood structure which has been shown to be far more extensive than previously thought. To date there has been no objective means for imaging and quantifying the dynamic morphology of the clitoris in three dimensions and in real time. This study was aimed to establish a 3D

ultrasound method suitable for such imaging.

Live 3D system by Philips Ultrasound was used for 3D data acquisition.

MATERIAL AND METHODS

Seven adult women undergoing minor gynaecological operations not related to clitoral structures consented to undergo scanning at the time of their procedure. A

RESULTS

Both the clitoral glans and body could be simultaneously displayed in the real-time imaging volume. In order to view the crura, the probe either had to be moved

from one side of the crus to the other, or depicted by performing a four sub-volume scan not in real-time. Better image quality was obtained using a water pad, to facilitate ultrasound transmission. The pad also allows the external portion of the clitoris to be clearly imaged without deforming the delicate structure.

CONCLUSIONS

This study demonstrates the feasibility of obtaining real-time and reconstructed 3D images of the clitoris using combined 3D ultrasound and minimally compressive imaging techniques. The non-deformable

scanning will also offer an opportunity to visualise clitoral dynamic morphology, thus improving our fundamental understanding of the structure and function of this enigmatic organ.

#-84 (SO)

Scrotal ultrasound more accurately predicts testicular growth asymmetry than prader orchidometer in adolescent scrotal varicocele

DANIEL HERZ and BENJAMIN DILLON*

*Mount Sinai School of Medicine, Division of Pediatric Urology, New York, USA - * Mount Sinai School of Medicine, Department of Urology, New York, USA*

PURPOSE

Most surgeons rely on testicular volume determination by physical exam or Prader orchidometry to determine if surgery for an asymptomatic adolescent scrotal varicocele is indicated. We compared the accuracy and predictive value of sonographically determined testicular volume to that of Prader orchidometry.

MATERIAL AND METHODS

Over 39 months, 106 boys were evaluated for a scrotal varicocele. The volume of 212 testicles was determined by the Prader orchidometer and a color Doppler ultrasound using a 7.5 MHz transducer. Left and right testicular volume was

considered significantly asymmetric if there was > 10% difference. Sonogram recorded linear measurements of length (L), height (H) and width (W). Testicular volume was calculated by the formula: $L \times W \times H \times 0.71$.

RESULTS

Boys' ages ranged from 12-19 years, with a mean of 14.3 years. Varicoceles were left in 101 boys (95.2%) and bilateral in 5 (4.8%). Varicoceles were grade 1 in 6 (5%) boys, grade 2 in 29 (28%), and grade 3 in 71 (67%). Prader orchidometer found significant testicular growth asymmetry in 18 boys (17%). Ultrasound found asymmetry in 31 boys (29%) ($p < 0.05$ Fisher's Exact Test). Ultrasound, however,

found 8 (7.5%) boys with no testicular volume asymmetry that the Prader orchidometer determined significant. Compared to ultrasound, sensitivity and specificity of the Prader orchidometer was 58% and 89%, respectively. Likewise, positive predictive value and negative predictive value was 69% and 84%, respectively.

CONCLUSIONS

From this report, Prader orchidometry would miss a significant number of boys with a surgical indication, and subject some to an unindicated operation. We recommend that testicular volume asymmetry by Prader orchidometry be confirmed by ultrasound.

Thursday, 16 June 2005: 14:15–15:05

S10: Exstrophy-epispadias complex 1

Chairs: P. Duffy, A. Khoury

#-85 (LO)

Quality of life in adult women born with bladder and cloacal exstrophy : a long term follow-up

MASSIMO CATTI and PIERRE MOURIQUAND
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PURPOSE

Aim of the study is to assess the quality of life of adult women born with bladder or cloacal exstrophy, with regards to social integration, psychological aspects, sexual behaviour and fertility.

MATERIAL AND METHODS

Among 140 exstrophic patients followed at Debrousse Hospital over the past 40 years, women over 18 years of age were selected: 22 cases were bladder exstrophies (19-41 years) and 1 cloacal exstrophy (19 years). A questionnaire,

concerning the above mentioned issues, was mailed to each patient.

RESULTS

15 patients (65%) anonymously answered the questionnaire. 80% were professionally satisfied and had an active social life, 33% still studying and 67% working, with a high proportion of medical secretaries. 33% declared some handicap in everyday life, mainly due to incontinence, genital prolapsus and poor self-esteem; 26% complained of depression and anxiety requiring medical treatment, and one reported alcohol and drug abuse during puberty. 73% had a stable partner and regular sexual intercourses (in one case

without penetration), but only 33% reported satisfactory sexual life (main complaints were incontinence, dyspareunia, impaired sensibility and abnormal genital look); partners' reactions were described as good, besides curiosity for genital appearance.

CONCLUSIONS

Bladder and cloacal exstrophy remains a challenge both for the surgeon and the patient: long term follow-up shows negative effects on the quality of life of adult female patients, especially on psychological and sexual issues. Although fertility is reported as normal, only 3/15 became pregnant in our series.

#-86 (SO)

Quality of life and pelvic floor function in bladder exstrophy patients with ureterosigmoidostomy

JENNIFER MILES-THOMAS, AMANDA MCINTYRE*, SUSAN GEARHART* and JOHN GEARHART†
*Johns Hopkins University, Urology, Baltimore, USA - * Johns Hopkins, Surgery, Baltimore, USA - † Johns Hopkins, Urology, Baltimore, USA*

PURPOSE

Classic bladder exstrophy is characterized by displaced pelvic floor musculature and significant skeletal and genitourinary defects. There exists a paucity of data evaluating long-term pelvic floor function and overall patient satisfaction in exstrophy patients following ureterosigmoidostomy. This study is an initial attempt to evaluate the quality of life and prevalence of pelvic floor dysfunction of exstrophy patients with ureterosigmoidostomies.

MATERIAL AND METHODS

Fifty-two participants who underwent ureterosigmoidostomy were identified through members of the Ureterosigmoidostomy Association and the Johns Hopkins Bladder Exstrophy Database. Questionnaires approved by the Institutional Review Board were mailed. Follow-up contact was made at 3 weeks. Data were analyzed using SigmaStat 3.0 (SPSS, Inc., Chicago, IL).

RESULTS

Eighty-three percent (n = 52) responded with a mean age of 44.4 and a mean of 41 years following ureterosigmoidostomy. Eighty-four percent of responders are married and half of female respondents had delivered children. The prevalence of urofecal incontinence was 63%. While the incidence of pelvic organ prolapse in this cohort of patients was 47.6 percent, there was no significant difference in incontinence among gender or presence of pelvic organ prolapse. Eighty-seven

percent of respondents reported good to excellent quality of life.

CONCLUSIONS

This is one of the first quality of life and pelvic floor assessments in patients with

bladder exstrophy who have undergone ureterosigmoidostomy. In these patients with complex pelvic musculoskeletal anomalies, we found a significant risk of urofecal incontinence and pelvic organ prolapse exists. Long-term follow up studies are needed to better understand

the role of pelvic floor musculature and improve patient outcomes.

#-87 (LO)

Long term follow up of 100 cases of bladder exstrophy: is uretero-sigmoidostomy outdated in a developing country?

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Averroes University health center Casablanca, Morocco, Pediatric Surgery, Casablanca, MOROCCO -

** Averroes university health center, pediatric surgery, Casablanca, MOROCCO*

PURPOSE

evaluate long term results of bladder exstrophy repair using two different approaches (ureterosigmoidostomy or reconstruction).

period, 4 patients had ureterosigmoidostomy. We evaluated continence rate, upper tract deterioration, metabolic disorders, neoplasms in colon or bladder and satisfaction and compliance of patients with treatment.

was higher for females in group I and was similar for both sex in group II. There was no cases of neoplasm in colon or bladder. Number of surgeries was significantly higher in group II.

MATERIAL AND METHODS

Between 1975 and 2003, 100 cases of bladder exstrophy were treated. Two different approaches were used. Group I: 58 patients operated between 1975 and 1992 underwent ureterosigmoidostomy. Group II: 42 patients operated between 1993 and 2003 underwent reconstruction program, however, during the same

RESULTS

Continence rate was higher in group I (92%) than group II (78%). The need to bladder augmentation and CIC was high in group II (90%). Good compliance to CIC was only 60% in group II. Upper tract deterioration was similar in the two groups (22%, 18%). Satisfaction of patients

CONCLUSIONS

Reconstruction program is actually our preferred approach to correct bladder exstrophy. However, in some cases of patients with difficult social conditions and/or with late presentation, ureterosigmoidostomy may be an alternative, especially in female patients.

#-88 (SO)

Bladder extrophy: reconstructed female patients achieving normal pregnancy and delivering normal babies

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INTRODUCTION

Congenital bladder extrophy affects 1 in 125,000 to 250,000 females with variable degrees of genital dysfunction. After primary bladder closure or urinary diversion, new issues are raised when patients achieve child-bearing age, correlated to sexual function and specially pregnancy capability.

PATIENTS AND METHODS

The study comprised 10 female patients diagnosed with congenital bladder extrophy that became pregnant between 1987 and 2004. Data on the initial method

of reconstruction and urogynaecological problems were obtained from a review of the hospital records.

RESULTS

The 10 patients had 3 basic types of reconstructive surgery: 5 colocoloplasties, 3 staged reconstructions and 2 ureterosigmoidostomies. All patients are continent and report normal sexual intercourse. 14 pregnancies were achieved and 13 normal babies were born. One patient has 3 kids. One patient had an abortion related to uterine prolapse. After uterus fixation, she got a new gestation and a successful delivery. Pregnancy was

complicated by non-febrile urinary tract infections in 4 patients. One patient had urinary retention treated by clean intermittent catheterization. All babies except one were delivered by cesarean section. No extra surgical difficulties were perceived. The baby that had spontaneous delivery was premature but recovered well.

CONCLUSIONS

Fertility in female patients with bladder extrophy is normal and pregnancy is possible and safe, but careful and specialized assistance is mandatory. Cesarean sections are recommended.

#-89 (P)

Prevention and treatment of uterine prolapse in exstrophy girls with rotundum- psoas-hitch procedure: a new surgical technique**THOMAS BOEMERS, CHRISTA SCHIMKE*, BARBARA LUDWIKOWSKI* and MIRCIA-AUREL ARDELEAN****Salzburger Landeskliniken, Paracelsus Medical University, Pediatric Surgery and Pediatric Urology, Salzburg, AUSTRIA - * SALK, Salzburg, AUSTRIA***PURPOSE**

Uterine prolapse is a frequent problem in females with exstrophy. The cause is a defective pelvic floor anatomy with lack of support of the pelvic organs. As the incidence of procidentia is high in this group, prophylactic fixation is advocated, also because many children with exstrophy undergo continent reconstruction, making later repair of prolapse difficult. We describe a new method for hysteropexy.

MATERIAL AND METHODS

During a 5 year period, 8 girls with bladder exstrophy underwent a 'Rotundum Psoas Hitch' procedure. In 6 hysteropexy was prophylactic and always combined with continent reconstructive procedures. In 2 girls who had uterine prolapse,

hysteropexy was therapeutic. In one, uterine fixation was done without additional abdominal procedure, whereas the other girl also had continent urinary reconstruction.

The operative technique consists in detaching both round ligaments from the inner inguinal ring. Both ligaments are positioned cranially, pulling the uterus upward. They are attached to the right and left psoas muscle by pulling them underneath the tendinous aspect of the psoas muscle and fixing them with non absorbable sutures to the tendon and musculature. This leads to posterior and cranial fixation of the uterus.

RESULTS

Mean age at operation was 8 years (4 – 14 yrs) and mean follow-up was 26 months (6 – 47 mo). No complications due to

hysteropexy occurred. One girl, had back pain for 2 weeks postoperatively. All except 2 girls had either a normal vaginal introitus or had undergone introitoplasty. In no case uterine prolapse developed during the follow-up period. 3 girls who had prophylactic rotundum-psoas-hitch reached puberty during the follow-up period. In both cases of therapeutic hysteropexy, uterine prolapse was cured.

CONCLUSIONS

We describe a new method for prophylactic and therapeutic hysteropexy in girls with exstrophy: the rotundum-psoas-hitch. It is a simple procedure during urological operations, free of complications. We recommend prophylactic uterine fixation in exstrophy girls, especially in combination with reconstructive urological procedures.

#-90 (SO)

Gait analysis in children with bladder exstrophy: effects of an early pelvic osteotomy**ANNA SVENNINGSSON, ELENA GUTIERREZ-FAREWIK, JAN SVENSSON, EVA BROSTROEM, YVONNE HAGLUND and AGNETA NORDENSKJOLD****Karolinska institutet, Dept of Women and Child Health, Stockholm, SWEDEN - * Pediatric Surgery, Dept of Women and Childs Health, Karolinska Institutet, Stockholm, SWEDEN***PURPOSE**

Gait in 14 children born with bladder exstrophy (BE) was evaluated in two subgroups based on incidence of early pelvic osteotomy (PE). Six children had undergone early PE, and 6 had not. Data from 21 control children was used for comparison

segment motion) and kinetic (joint moments and powers) data in the three anatomical planes of motion and temporal-spatial parameters were analyzed. Gait data were compared first between all children with BE and control, then between the two BE subgroups (PE vs. no-PE).

RESULTS

All children with BE walked with greater posterior pelvic tilt, frontal plane pelvic motion, hip extension, ankle motion, and external foot rotation than the control group, though none of these differences

were observed based on PE. The PE subgroup, however, had less pelvic rotation and hip adduction, but more knee flexion, ankle motion and external foot progression than the no-PE subgroup. The no-PE subgroup also showed a tendency to walk with more 'bow-legged' knee loading.

CONCLUSIONS

BE and early PE were determined to have long-term effects on patients' instinctive walking patterns. Some of the effects of BE appear to be neutralized by an early PE.

MATERIAL AND METHODS

All subjects were tested in 3-dimensional gait analysis using a 6-camera, 2 forceplate system. Kinematic (joint/

#- 91 (PWP)

Impact of epispadias repair on bladder capacity in boys with classic bladder exstrophy**MARCUS KUFNER, RANJIV MATHEWS* and JOHN GEARHART***Johns Hopkins School of Medicine, Urology, Baltimore, USA - * The Johns Hopkins School of Medicine, Urology, Baltimore, USA***PURPOSE**

Growth of the bladder in children with bladder exstrophy remains the primary factor responsible for later ability to have voided continence. Improvement in bladder capacity, has been noted in some boys following epispadias repair. This increase has been felt to be secondary to the increase in resistance provided by successful epispadias repair. Does the timing of epispadias repair influence the ability of the bladder to grow?

MATERIAL AND METHODS

Review of an IRB approved exstrophy database was performed to obtain information regarding bladder volumes

measured during yearly follow-up of boys with classic bladder exstrophy. All measurements were obtained using a standard technique under anesthesia. Volume prior to epispadias repair was compared to the next volume measure obtained following repair. Timing of epispadias repair was compared to changes in bladder capacity in 30 boys. Monthly increases in bladder capacity were calculated in boys having repair at ages <12 months (4 pts), 13-24 months (12 pts), 25-48 months (20 pts).

RESULTS

All patients had surgical reconstruction using the modified Cantwell-Ransley technique. Patients that had surgery prior

to 12 months of age had the highest rate of monthly increase in bladder capacity (2.40cc/month). Monthly growth rates were 1.85cc/month for patients undergoing repair between 13-24 months and 1.18cc/month for those 25-48 months.

CONCLUSIONS

Epispadias repair does lead to early increases in bladder capacity. The monthly improvement in bladder capacity is greatest in those children having reconstruction performed before 12 months of age and least in those children having surgery after 25 months of age.

Thursday, 16 June 2005: 15:05–15:30

S11: Endourology / laparoscopy 1

Chairs: A. El-Ghoneimi, C. Peters

#-92 (P)

Robotically assisted laparoscopic antireflux surgery in children

CRAIG PETERS and JOSEPH BORER*

*Childrens Hospital Boston, Urology, Boston, USA - * Childrens Hospital, Urology, Boston, USA*

PURPOSE

To assess the safety and efficacy of robotically assisted laparoscopic surgery for correction of vesicoureteral reflux (VUR) in children, we reviewed the results of our initial experience with this novel surgical technology.

MATERIAL AND METHODS

24 patients underwent robotically assisted transperitoneal extravesical antireflux laparoscopic surgery for VUR using the DaVinci system. 3 ports were used with the camera in the umbilicus. The detrusor tunnel was created with electrocautery

and the muscularis closed over the ureter with interrupted PDS sutures. No stents were left.

RESULTS

22 girls and 2 boys (mean age 6.5 yrs, range 4.6 mos. to 11.3 yrs) underwent antireflux surgery (3 bilateral, 11 L 10 R). Mean operative time for the unilateral cases was 2.5 hours. Overnight catheter drainage was used in 18 patients, 2 nights in 2, and no catheter was left in 4. Patients were discharged after .25 to 3 days. Two patients had minor bladder leaks requiring catheter drainage. One child had post-operative bladder pain

following bilateral surgery, which resolved with anticholinergic medication. With a mean of 19.5 months of follow-up, 22 have had imaging and are without upper tract dilation. 22 have had cystography, and 20 are free of reflux. Two patients have grade 2 reflux persisting and are being followed.

CONCLUSIONS

Our initial experience indicates that robotic assistance permits safe and effective laparoscopic antireflux surgery, and may be a useful option for routine antireflux surgery, with a possible reduction in peri-operative morbidity.

#-93 (PWP)

Pediatric laparoscopic pyeloplasty using robotic assistance

CRAIG PETERS, STUART BAUER*, BARTLEY CILENTO* and JOSEPH BORER*

*Childrens Hospital Boston, Urology, Boston, USA - * Childrens Hospital, Urology, Boston, USA*

PURPOSE

The efficacy and efficiency of robotic assistance for pediatric laparoscopic pyeloplasty were assessed to determine its potential role.

MATERIAL AND METHODS

30 children underwent laparoscopic pyeloplasty with robotic assistance (22 M, 8 F; mean age 8.2 yrs., range 0.25 - 19). Exposure was by medial reflection of the

colon in 20, trans-mesenteric in 9 and retroperitoneal in 1. A stent was placed in 18, 10 had a wound drain only and 2 had no stent or drain. 30 open pyeloplasties were reviewed for length of stay (LOS) and cost.

RESULTS

There were no conversions or complications. Mean operative time was 3.5 hrs, with laparoscopic time averaging 2.5 hrs and was unaffected by laterality. Surgical experience influenced total

operative time ($p=0.02$), as did use of a stent and exposure ($p=0.005$). Age positively correlated with time ($p<0.0005$; $r^2=.39$). LOS was from 0.25 to 6 days. Compared to open pyeloplasty, operative times and total cost were 17% more but LOS was 27% less. With a mean 17 mos. of follow-up, 27 patients have been evaluated and 26 have satisfactory results with decreased dilation, reduced washout times and absence of pain. One patient required re-do pyeloplasty following retroperitoneal repair due to a missed crossing vessel.

CONCLUSIONS

This initial experience with laparoscopic pyeloplasty using robotic assistance shows

its utility for minimally invasive reconstruction in children of all ages. The ability to perform enhanced anastomotic suturing should permit more rapid

acquisition of the necessary skills than has been possible with conventional laparoscopic pyeloplasty.

#-94 (SO)

Robotically assisted retroperitoneoscopic pyeloplasty: mid-term of 50 cases with the da vinci surgical system ®

LARS HENNING OLSEN and TROELS MUNCH JOERGENSEN*

Aarhus University Hospital- Skejby-, Urology - Division of Paediatric Urology, Aarhus, DENMARK - * Aarhus University Hospital-Skejby-, Urology, Division of Paediatric Urology, Aarhus, DENMARK

PURPOSE

To assess our experience with 50 retroperitoneoscopic pyeloplasties with the Da Vinci Surgical system, the largest series published so far.

MATERIAL AND METHODS

Fifty-two retroperitoneoscopic robotically-assisted pyeloplasties were performed in 50 children (median age 4.3 ys (2.0-16.2) 2 bilateral) from March 2002 until November 2004. The indications were pain, infections, decreasing differential function on MAG3 renography or a large hydronephrosis with an AP diameter of > 50 mm. The catheter was removed 4-6 weeks after the primary procedure. The patients were followed with Ultrasound and MAG3 renography 3 and 9-12 months postoperatively. Data

were prospectively recorded in a database.

RESULTS

The median operating time (skin-to-skin) was 155 minutes (76-230). The median postoperative hospital stay was 1 day (1-3). There were no perioperative complications. One patient was converted to open operation due to a large hydronephrosis and a distally placed UPJ which could not be reached by the system. Two patients were readmitted the 3rd and the 5th postoperative day due to occlusion of the JJ catheter by a blood clot and treated with a nephrostomy for few days. One patient without a JJ catheter was readmitted with similar symptoms and treated with a nephrostomy. In 3 patients the JJ catheter was found in the lower ureter and had to be removed with

a Dormia basket. On follow-up (median 22 months (1-30) 3 patients had to be re-operated due to recurrent symptoms and/or decreasing differential function on MAG3 renography. One of these patients had an overlooked aberrant vessel, the two others a 'kinking' ureter. None of them had a re-stenosis.

CONCLUSIONS

Robotically-assisted retroperitoneoscopic pyeloplasty has proved to be a feasible procedure. The results are comparable with our own results and those of others with standard laparoscopic instruments. The operative time is shorter with major improvements for the laparoscopic surgeon. The system makes the procedure easier for less trained laparoscopic surgeons and is an major advantage for the ergonomics in laparoscopic surgery.

#-95 (P)

Magnetic positioning system for trocarless laparoscopic instruments

LINDA BAKER, ROBERT EBERHART*, RAUL FERNANDEZ†, RICHARD BERGS† and JEFFREY CADEDDU

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PURPOSE

Trocars limit laparoscopy by creating a fixed working envelope. Additional ports aid instrument position, visibility and efficiency but may introduce pain, and risk bleeding or organ damage. To circumvent these issues, a novel laparoscopic transabdominal magnetic positioning system (MPS) and tool platform was developed, allowing unrestricted movement of a magnetically

anchored intra-abdominal camera and tissue retractor.

MATERIAL AND METHODS

We engineered, fabricated, and functionally tested in a porcine model the MPS with a custom-designed intra-abdominal laparoscopic camera and liver/spleen retractor. Both are introduced via one umbilical 12mm laparoscopic trocar,

and coupled across the abdominal wall by a surgeon-controlled extracorporeal magnet. The MPS thus allows the surgeon to extracorporeally magnetically 'steer' the trocar-less intracorporeal tool to any location on the ventral abdominal wall.

RESULTS

Functionally adequate magnetic lifting forces at both 1 and 2 cm wall thickness

were 850 g and 350 g, respectively and short term use was not associated with tissue damage by histological analysis. The MPS with custom camera and retractor performed well, permitting 3 porcine laparoscopic nephrectomies using only a 5 mm and custom lighted 12 mm

trocars (left and right hand working instruments only).

CONCLUSIONS

Our novel MPS and tool platform is capable of securely and flexibly supporting

prototype tissue retractors or cameras across a porcine abdomen. Laparoscopic porcine surgery utilizing only 2 trocars is feasible. Further refinements, including robotic technology, will facilitate the development of an array of clinically relevant trocar-less laparoscopic instruments.

#-96 (PWP)

Anterolateral approach for retroperitoneoscopic renal surgery

VENKATA JAYANTHI

Columbus Children's Hospital, Urology, Columbus, USA

PURPOSE

Traditional retroperitoneoscopic renal surgery involves a lateral or posterior approach to the kidney. We describe an anterolateral approach which may offer some advantages, especially for those with little prior laparoscopic experience.

MATERIAL AND METHODS

Technique: A 1 cm incision is made 1 cm above the iliac crest. After retroperitoneal balloon distention, a camera port is placed and retroperitoneoscopy performed. Two 5 mm ports are placed under direct vision anteriorly and posteriorly at the ends of what would be a standard flank incision.

This port placement allows dissection analogous to that performed via an open exploration.

RESULTS

Forty-one patients underwent a retroperitoneoscopic renal procedure. Twenty-seven underwent pyeloplasty and 14 underwent nephrectomy. There was only one open conversion, a boy with UPJ obstruction and dense adhesions related to prior renal trauma. Ages ranged from 1 to 20 years (mean 7.8). Inadvertent peritoneal tears occurred in 15 patients, mostly early in the series. The resulting pneumoperitoneum did not preclude successful completion of the procedure in any case, although some did require

placement of a 4th port for peritoneal retraction.

CONCLUSIONS

The anterolateral approach is useful for those with little prior laparoscopic surgery because the exposure and dissection is identical to that performed with a standard flank incision. This is beneficial during pyeloplasty where aberrant vessels are typically located anterior to the UPJ. Ports are placed relatively far apart allowing surgical instruments to have greater mobility with less fighting. The main disadvantage with this approach is the potential for peritoneal tears.

#-97 (PWP)

Single laparoscopic port assisted insertion of peritoneal dialysis catheters in children

IRENE MILLIKEN, ARVIND NAGRA*, MAGGIE FITZPATRICK* and RAMNATH SUBRAMANIAM

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PURPOSE

To assess the effectiveness and complication rate in laparoscopically placed peritoneal dialysis catheters (PDC) using the single port technique.

MATERIAL AND METHODS

This is a prospective study conducted from 2002 to 2004. Children with established renal failure requiring insertion of PDC were included. The insertion was

performed by a single surgeon using a single port laparoscopic technique. Partial omentectomy was performed and the catheter accurately placed in the pelvis under vision. The catheter could then be used immediately post operatively.

RESULTS

Twenty-two children (13F:9M) with a mean age of 9 years (1.0-17.5) had PDC inserted laparoscopically between 2002

and 2004. Indications included renal dysplasia, reflux nephropathy, HSP nephropathy, IgA nephropathy, atypical HUS, FSGS and congenital nephritic syndrome. Mean time for insertion was 26 mins (23-29). 10 (45%) catheters were used within 4 hours. Early complications include a minor leak that resolved within 24 hours, 1 exit site infection that resolved with oral flucloxacillin, 1 blockage due to a fibrin clot that resolved with urokinase and 1 blocked after 2 weeks due to adhesions (not omentum) and was revised.

CONCLUSIONS

Laparoscopic insertion of PDC allows accurate placement of the catheter under

direct vision, immediate use post operatively with minimum morbidity and good cosmesis. We found that laparoscopic insertion using the single

port technique was a safe, effective and quick technique for use in children.

Friday, 17 June 2005: 08:00–08:30

S12: Exstrophy-epispadias complex 2

Chair: P. Caione, D. Canning

#-98 (P)

Oblique pelvic osteotomy in the exstrophy / epispadias complex

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Great Ormond Street Hospital for Children, Orthopaedics, London, UNITED KINGDOM

PURPOSE

A review of oblique osteotomy from sciatic notch to iliac crest undertaken concurrently with urological reconstruction. The technique was developed at Great Ormond Street Hospital in 1996 and has been used there since along with a system of external fixation, which is relatively simple compared with others.

MATERIAL AND METHODS

We reviewed oblique osteotomies in 45 babies and children with classical or cloacal exstrophy. The average follow-up was 37 months. Clinical measures were pain, function, continence and gait. The

pubic intersymphyseal diastasis was recorded on pre-operative and post-operative x-rays. Children were grouped according to age at osteotomy and, in classical exstrophy, according to urinary continence. The percentage reduction of the original diastasis was determined and a comparison of pubic approximation made between the types of post-operative immobilisation.

RESULTS

The majority of patients (42) reported no disability. Six had a waddling gait and two residual external rotation. All wounds healed and every osteotomy united. There were no neurovascular complications. The average improvement in pubic

approximation was 37%. Children older at operation (18-60 months) maintained better correction over time (76%). Children immobilised by external fixation maintained better closure of the pelvis than those treated in plaster casts (51% and 12.2% respectively). Maintenance of pubic approximation was associated with better urinary continence. Complications included three cases of loosening of the external fixation requiring early removal.

CONCLUSIONS

Oblique pelvic osteotomy is effective in the reconstruction of bladder exstrophy and compares well with other types of osteotomy. It is a reliable operation and applicable to all age groups.

#-99 (PWP)

Repeat pelvic osteotomy in patients with prior failed closure of bladder exstrophy: applications and outcomes

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PURPOSE

In patients with failed primary or secondary closure of bladder exstrophy, repeat osteotomy is useful in facilitating the reconstruction. The clinical consequences of repeated surgical disruption of the pelvic ring, however, are poorly described. The authors review their experience with repeat osteotomy for repair of bladder exstrophy.

MATERIAL AND METHODS

We searched our IRB-approved bladder exstrophy database of 828 patients seen at our institution, identified all patients who had undergone repeat pelvic osteotomy (RPO), and analyzed patient history, complications, and orthopedic outcomes.

RESULTS

Fifty-six patients who underwent RPO were identified. All had previously failed at least one attempted bladder closure. Initial pelvic osteotomy was performed in 73% at the time of initial bladder closure; the remainder underwent initial osteotomy during subsequent bladder closure attempts. RPO was performed at a mean age of 23.2 months. Mean time

from initial osteotomy to RPO was 20.5 months. Anterior innominate or combined iliac/innominate approaches comprised 80% of RPO procedures. 95% of patients had a normal gait after RPO; all three patients with abnormal gait had osteotomy site non-union, treated with bone grafting. Five patients had local fixator pin site infections, managed with local care and oral antibiotics, and one

patient had late osteomyelitis requiring incision and drainage. None had femoral or sciatic nerve palsy after RPO at our institution.

CONCLUSIONS

Orthopedic complications after RPO are uncommon, and most patients have

a normal gait postoperatively. RPO is useful in the complex reconstruction of failed exstrophy closures, and few patients fail re-closure when combined with RPO.

#-100 (PWP)

Pelvic reconstruction in bladder exstrophy

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INTRODUCTION

The main indication to perform pelvic osteotomy and symphysis reconstruction in cases with bladder exstrophy is to facilitate the Uro-Genital reconstruction. The surgical goals are to: normalize the symphysis diastases, increase the intrapelvic volume and create a stable pelvic ring with a symphysis that can withstand separation through growth and motion during normal activities.

MATERIAL AND METHODS

15 patients have been operated with pelvic osteotomies since 1990 (1 posterior, 2 horizontal, and 12 oblique). Symphysis reconstruction has been performed with fascia lata strip in 5 cases and a new "double door" plasty in 5 cases. All cases have been followed with x-ray examinations annually. Symphysis diastases and hip joint development has been measured.

RESULTS

The symphysis diastases continue to widen during growth in cases where sutures but

no augmentation of the symphysis were performed. This also happens in cases with fascia lata strips but to a lesser degree (3-6 cm). The cases with "double door" plasty stay stable after an initial widening during the first months. All < 3 cm when followed from 1-5 years.

CONCLUSIONS

A stable narrow symphysis can be created by combining oblique pelvic osteotomies and "Double Door" plasty.

#-101 (P)

Anterior perineal reconstruction in exstrophy-epispadias complex: outcomes

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PURPOSE

To assess the role of anatomy reconfiguration of the anterior perineum in exstrophy-epispadias (E-E) patients. To stress the use of bipolar stimulator to detect the perineal musculature and to increase the functional results in E-E reconstruction.

MATERIAL AND METHODS

Twenty-two patients with E-E complex were treated in a 7-year period: 17 patients presenting bladder exstrophy (aged 3 days to 6 years) and 5 incontinent male epispadias (aged 9 months to 16 years). Electric bipolar stimulator was used to identify and reapproximate at the the periurethral muscular complex, as

a part of the anterior perineal membrane. Bladder capacity, dry intervals, UTI, upper tract deterioration and surgical complications were evaluated as 2-year follow-up. Results were compared with a matched group of 19 E-E patients treated in the previous 5-year period, but not with the technique presented here (control group). Student T-test and Manney-Withman test were adopted for statistics.

RESULTS

No bladder neck or urethral dehiscence were observed. Mean bladder capacity was 80 cc in exstrophies and 120 cc in male epispadias. Mean dry interval increased to 75 minutes in exstrophy patients and to 130 minutes in epispadias. Daytime continence was achieved in 3 exstrophic and in all epispadias. The difference with

the control group was significant ($p < 0.05$) concerning complications, continence and bladder volume.

CONCLUSIONS

The deeper positioning of the bladder neck and urethra within perineum significantly increased the functional

results in E-E reconstruction. Anterior perineal musculature identification and its midline reapproximation at the posterior urethra was effective for coordinated bladder cycling and functional capacity development.

#-102 (PWP)

Surgical and functional results following epispadias repair with the Mitchell technique

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PURPOSE

To evaluate surgical complications and functional results following complete penile disassembly for epispadias repair.

same surgeon; the urethral plate was dissected proximally to allow a partial reconstruction of the bladder neck.

RESULTS

No major complications occurred; 2 Mathieu's urethroplasties were necessary in 2/12 cases (16%). At a mean follow-up of 6 years: 12/12 patients had a straight urinary stream, 10/12 feel voiding sensations; 10/12 showed remarkably increased bladder capacity (group 1: 66 to 195 ml; group 2: 64 to 120 ml). (Fisher's test group 1 $p = 0.327$, group 2 $p = 0.047$ versus mean normal value at age). Voluntary continence was achieved by

10/12 patients (2 are less than 3 years old); patients of group 1 retain urine from 120' – 150', patients of group 2 void by abdominal torch with a dry interval between 60' and 120'.

CONCLUSIONS

The Mitchell's technique permits a partial reconstruction of the bladder neck and a physiological position of the urethra to achieve continence. Our patients showed a progressive increasing in bladder capacity with satisfying partial urinary continence and bladder cycling. In group I any patients didn't require until now a bladder neck reconstruction.

#-103 (V)

Radical soft tissue reconstruction for continence in bladder exstrophy (Kelly's operation)

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PURPOSE

To demonstrate radical soft tissue reconstruction of bladder exstrophy. The index case is a male with classic bladder exstrophy, following a successful primary closure of his bladder at birth

cohen-type ureteric reimplants are fashioned. The urethral plate is separated from the penile shaft skin and lifted off the corpora to the level of the bladder neck. The attachment of the penile corpora to the inferior pubic rami is exposed and the perineal muscle between them demonstrated. The levator ani is released from inside by incising along its attachment to the obturator internus fascia. The pudendal pedicle is found in Alcock's canal and traced forward to the base of the corpora. The corpora are freed

from the pubic rami from below and above, preserving their pedicle. 2. Reconstruction: The bladder is closed and the bladder neck shouldered to include the veru montanum within the urethra, which is closed around a silicone stent and placed between the corpora in a hypospadiac position. The perineal muscle is wrapped around the urethra below the corpora, which are approximated with rotation to reduce chordee. The Abdomen is closed, the penile base is attached to the lower end of

TECHNIQUE

1. Deconstruction: The midline incision and the bladder are reopened. Bilateral

the incision and the penile skin is replaced.

CONCLUSIONS

This procedure has been successfully applied to over 50 cases in our two

institutions. The adaptations to female cases and primary epispadias are also described.

#-104 (P)

Continence following soft tissue reconstruction (Kelly's operation) in unselected cases of classic bladder exstrophy

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PURPOSE

Since 1999, all patients with classic bladder exstrophy have had a neonatal bladder closure followed by radical soft tissue reconstruction (Kelly operation) from 6 months of age. Unlike with other techniques of creating outlet resistance, there was no prior selection of patients according to bladder capacity.

MATERIAL AND METHODS

The data of 23 children (17 males and 6 females) followed for a mean of 41 months (minimum 12) after their Kelly operation

were reviewed. Data from the exstrophy database, nurse specialist assessments and radiology was available. Those with follow up of over 2 years were compared to those younger patients less than 2 years from surgery.

RESULTS

Data was available from 22 patients. Of the whole group 18 (82%) had developed a dry interval (mean 93 minutes, range 30-180). Mean bladder capacity was 97 mls (30-175). There were 2 failures (no dry interval and small capacity) who have had a bladder reconstruction. Of the

remainder 10 (50%) have daytime continence and 5 (25%) are also dry at night. In 14 patients followed more than 2 years 64% were continent by day and 36% by night, compared to 17% and 0% for 6 younger patients with shorter follow up.

CONCLUSIONS

The Kelly operation creates a reliable and controllable outlet resistance in this unselected group of patients. Continence depends on the development of bladder capacity, is difficult to assess in infants and improves over time.

Friday, 17 June 2005: 08:30–09:10

S13: Incontinence

Chair: P. Hoebeke, S. Bauer

#-105 (P)

The use of bulking agents for continence in a difficult pediatric population

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PURPOSE

Evaluate a series of difficult incontinence cases using bulking agents for improvement or dryness.

MATERIAL AND METHODS

We retrospectively reviewed the use of bulking agents for continence at the bladder neck and catheterizable channels to the bladder, such as the Mitrofanoff. We reviewed the operative logs of three pediatric urology surgeons from 1998 to present. The United States CPT coding system was used to identify those patients who underwent endoscopic injection of bulking material to the bladder neck or Mitrofanoff. The patients' charts were reviewed for continence outcomes and associated findings.

RESULTS

Thirty-eight patients had 55 bulking agent injections (events). Of 38 patients 12 (31%) had more than one bulking agent procedure. The median number of repeat use bulking agents was 2 (range 2-4). Bulking material was delivered to bladder neck (43/55) or Mitrofanoff (12/55). Deflux® was used in 35/55 events. The majority of patients had a diagnosis of exstrophy-epispadias 28/38; the remainder carried a diagnosis of myelodysplasia, ectopic ureter, VATER or cloacal abnormality. Of the 55 events, 19 were improved or dry, 18 were the same and required additional intervention, 11 were unknown and 5 were too early to tell. The successful 19/55 injections represented 17/38 or 45% of patients. 2/12 (17%) patients receiving repeat

injection had improvement. 9/14 (64%) females were improved or dry. Length of follow-up among improved or dry persons was most frequently 1 year (range: 2 months - 5 years).

CONCLUSIONS

Our results are comparable to recent reports. Bulking agents may be a reasonable alternative to more invasive reconstructive procedures to correct incontinence in these patients. Repeat bulking agent injections appears to be of little benefit in this series. Initial endoscopic bulking agent treatment for challenging incontinence problems in females may be a reasonable alternative to major reconstruction.

#-106 (P)

Antegrade and retrograde endoscopic Deflux bladder neck bulking in pediatric incontinence

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INTRODUCTION

Endoscopic bladder neck bulking techniques offer the potential for a relatively non-invasive cure of a difficult clinical problem. We review our experience using an antegrade and retrograde approach.

METHODS

28 children were treated since April of 2003. There were 17 boys and 11 girls (mean age 11). The patients included 19 patients with spina bifida, 2 with tethered cords, 5 with epispadias/exstrophy, and 2 with stress urinary incontinence. Urodynamics confirmed low-leak point pressures (LPP) and adequate capacity. Patients were treated with either

a retrograde or antegrade approach. When an antegrade approach was used, pre and post treatment LPPs were recorded and a post treatment supra-pubic tube (SPT) was placed.

RESULTS

Mean follow-up was 13 months (6-20 months). Patients averaged 1.6 injections

(range 1-3). 8 patients were treated using the retrograde approach while the remaining 20 were treated either in an antegrade or mixed approach. Mean injected volume was 4.5 ml (range 3-6 ml). 75% of patients are socially continent. 10% (3/28) had failure of bladder neck coaptation whereas the remaining 15% experienced a rapid fall-off in efficacy. In

successful antegrade patients, intra-operative LPPs rose from <30 cm H2O to >60 cm.

DISCUSSION

Our 20 month experience with antegrade/retrograde bladder neck bulking

demonstrates that this is a viable therapy for this group of children. While some patients have experienced prolonged success, re-treatment can be beneficial. The antegrade approach offers several advantages including intraoperative LPPs, improved visualization, as well as the placement of a SPT to limit post-procedural remodeling.

#-107 (SO)

Utility of dextranomer/hyaluronidase in the management of the exstrophy-epispadias complex

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PURPOSE

Dx/HA has been used as a bulking agent for the mitigation of vesicoureteral reflux. It has been reported to have benefits to provide outlet resistance in the urethra with potential improvement in bladder capacity and improvement of continence. We reviewed our experience with the use of Dx/HA in a large cohort of children with the Exstrophy-Epispadias complex (EEC).

MATERIAL AND METHODS

Twenty children (M:F = 14: 6) with EEC had Dx/HA utilized for management. All patients had failed initial attempt at reconstruction, but had subsequent

successful closure at our institution. Indication in 2 patients was persistent leakage following bladder neck reconstruction (BNR) and in the remainder was to provide increased outlet resistance to stimulate bladder growth. Dx/HA was injected at the bladder neck to achieve mucosal apposition. 9 patients had 1, 8 patients had 2 and 3 patients had 3 treatments.

RESULTS

In 2 patients with prior BNR, increased dry intervals were noted in one patient that voids per urethra and complete cessation of leakage was noted in the other who is on intermittent catheterization through an

abdominal stoma. Only 2/18 patients without BNR had increase in bladder capacity following the use of Dx/HA. One patient failed subsequent BNR and the second is awaiting surgery.

CONCLUSIONS

Dx/HA was shown to be of no benefit in increasing bladder capacity in children that had compromised bladder growth following successful reconstruction. It may have a role providing additional outlet resistance and added continence in children that have partial success with BNR.

#-108 (LO)

Long term effects of dextranomer endoscopic injections for treatment of urinary incontinence: an update of a prospective study of 61 patients

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PURPOSE

To treat a sphincteric deficiency in children, endoscopic bladder neck injections may avoid or rescue more complex procedures. We report our experience with bladder neck injections of dextranomer (Deflux®) over a seven years period in 61 patients

MATERIAL AND METHODS

From September 1997 to September 2004, 61 children (41 males, 20 females) 5 to 18 years of age, suffering from a severe sphincteric incompetence (exstrophy-epispadias 26 neuropathic bladder 27, bilateral ectopic ureters 5, miscellaneous 3) have been treated. Preoperative evaluation consisted in medical history, pad test, urine culture, urinary tract

ultrasound and videourodynamic study, repeated at six months and then on a yearly basis. The patient was classified as continent (dryness interval of four hours between micturition or CIC), significantly improved (minimal incontinence requiring no more than one pad per day and no further treatment) and treatment failure (no significant long lasting improvement). Videourodynamics were mainly useful to study the evolution

of the bladder capacity, activity and compliance. The patients received 1 (40), 2 (17) or 3 (4) injections. Mean injected volume per session was 3.9 cc (range 1.6 to 12). Post operative complications were: temporary dysuria (2), non febrile UTI (10), orchi-epididimitis (1) and urinary retention with pyelonephritis (1).

RESULTS

The incidence of dry or improved patients along follow up is: 79% (48/61) at one month, 56% (31/55) at 6 months, 52% (24/46) at one year, 51% (18/35) at two years, 52% (16/31) at three years, 48% (12/25) at 4 years, 43% (9/21) at 5 years, 36% (4/11) at 6 years and 40% (2/5) at 7 years. Six patients developed a contracted bladder after treatment.

CONCLUSIONS

Endoscopic treatment of sphincteric incompetence with Deflux® (a non toxic, non immunogenic, non migrant synthetic substance) is effective up to two years in half of the patients. Then up to seven years of follow up a slow decrease in efficacy is observed and the treatment remains beneficial to more than one third of them.

#-109 (LO)

Extended experience with the use of botulinum toxin A in children with non neurogenic voiding dysfunction

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PURPOSE

Last year short term results of the use of Botulinum toxin A in children with non neurogenic voiding dysfunction were presented. Actually long-term follow up can be given.

MATERIAL AND METHODS

Prospective study including therapy resistant children suffering non neurogenic voiding dysfunction, despite former treatment

RESULTS

During a study period of 19 months (starting may 2003) 21 patients were

included (10♀/ 11♂). All patients showed decreased bladder capacity for age, urge and urge incontinence. Main treatment duration before inclusion was 45 months. 100 Units of Botox® were injected in the detrusor. Side effects reported were 1 temporary urinary retention (10 days), 1 temporary vesicoureteric reflux and 2 UTI. 15 children (8♀/ 7♂) have a minimum follow up of 6 months and are the study group for long-term evaluation. After 1 injection, 9 patients showed full response (no more urge and dry during day) with an increase in bladder capacity 167 ml tot 271 ml ($p < 0.001$). Three patients showed partial response (decrease in urge and incontinence) and 3 remained unchanged. 8 of the 9 full responders are still 'cured' after 12 months. 1 patient relapsed after 8 months. The 3 partial responders and the

relapse patient underwent a second injection with full response in the formerly full responder and 1 of the partial responders. The effect lasted 8 months in both full responders.

CONCLUSIONS

Botox® injection in children with non neurogenic voiding dysfunction is an excellent adjunct in treatment, leading long term results in 70% of the children after 1 injection. In this perspective children differ from adults who need multiple reinjections.

Friday, 17 June 2005: 09:15–10:00

S14: Intersex 1

Chair: M. B. Ostrowska, G. McLorie

#-110 (LO)

Outcome following vaginal reconstruction

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PURPOSE

Vaginal reconstruction is necessary in a number of clinical situations and continues to be challenging. We evaluated the outcomes of vaginal reconstructions between 1985-2000.

MATERIAL AND METHODS

63 patients who had vaginoplasty were reviewed retrospectively. Presenting diagnosis included congenital adrenal hyperplasia (23), cloacal extrophy (20), androgen insensitivity (8), urogenital sinus anomaly (6), mixed gonadal dysgenesis (3), true hermaphroditism (2) and sacrococcygeal teratoma (1). The mean age at operation was 83.9 months (2-235) and the follow up was 116.8 months (48-232). 13 ileovaginoplasties were

performed for androgen insensitivity, cloacal extrophy and urogenital sinus anomaly in 6, 4 and 3 patients respectively. 3 of the cloaca patients underwent colovaginoplasty. Skin flap perineal vaginoplasties were performed in the majority (39). 8 patients underwent vaginal pullthrough.

RESULTS

Recurrent vaginal dilatation was required in 19/63 patients, 3 of whom had ileovaginoplasties. Of the 11 patients that required revision 2 had intestinal vaginoplasties. 4 cloaca patients underwent re-do for stenosis. Prolapse was observed in 1 ileo and 1 colovaginoplasty patient but required no treatment. One colovaginoplasty patient developed bleeding 2 years after the

surgery. Fistula formation in 2 patients has been successfully managed. One patient developed significant discharge which was found to be a retrained foreign body. 14 out of 16 intestinovaginoplasty patients reported discharge. Menstruation history was available in 18, 8 had normal periods. In the remaining 2 required reoperation and 6 dilatation. 2 presented with haematocolpos

CONCLUSIONS

Vaginoplasty can be performed in a variety of ways. When intestinovaginoplasty techniques are necessary the results appear satisfactory although discharge can be a problem and long term sexual function could not be evaluated.

#-111 (LO)

Vaginal replacement in children and young adults – twenty years and counting

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INTRODUCTION

A twenty-three-year experience with bowel-vaginoplasty is reviewed with particular attention to outcome, including quality of life, and post-operative sexual function.

MATERIAL AND METHODS

Fifty-seven patients are reviewed who underwent bowel replacement

vaginoplasty between 1980 and 2004 including forty-two with Mayer Rokitansky Syndrome, six with androgen insensitivity syndrome, six after Rhabdomyosarcoma, one with penile agenesis, one with cloacal extrophy and one conjoint twin. Replacement vaginoplasty was done with sigmoid colon in thirty-nine, ileum in eleven and cecum in nine. A validated IRB approved instrument (Female Sexual Dysfunction Questionnaire) was used to evaluate the postoperative sexual function.

RESULTS

In terms of post-operative sexual function, 44/57 patients were contacted, nine were lost to follow up and four were too young for evaluation. 36/44 responded to the FSDQ, and eight refused. Of the thirty-six patients who responded 15 were married and 31 were sexually active. On a scale of zero to five, 28/36 reported sexual desire, 30 sexual arousal, 30 sexual confidence and 28 sexual satisfaction.

20/36 reported frequent orgasm, 8 occasional orgasms and 8 no orgasm. 32/36 reported adequate lubrication for intercourse and 2 reported dysuria. 2/36 patients are on home dilation and 2/36 require estrogen suppositories. 34/36 use home douching and 16/36 need pads because of mucous production.

CONCLUSIONS

It would appear that isolated bowel segments provide excellent tissue for vaginal replacement and we believe that colonic segments, particularly sigmoid, are preferable to small bowel. Post-

operative sexual function seem to be adequate following colo-vaginoplasty and colo-vaginoplasty does seem to be durable.

#-112 (PWP)

Complex vaginoplasty in young women

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PURPOSE

Complex vaginoplasty may be defined as where there has already been previous complex pelvic surgery and the patient is unsuitable for conservative treatment or minor surgical revision. This study evaluates a group of young women undergoing complex vaginoplasty.

MATERIAL AND METHODS

This was a retrospective review of all patients who had undergone a complex vaginoplasty between 1997 and 2004. Information was recorded on the underlying condition, previous surgery and preoperative assessment. Operative

technique and complications were noted as well as the outcome in terms of menstruation and sexual activity.

RESULTS

15 patients fulfilled the criteria. Mean age was 22.2 years (17-36 years) and mean follow up was 4.75 years (9 months to 7 years). 14 had complex congenital anomalies of the lower genital tract and 11 of these had associated anomalies of the urinary and gastrointestinal system. 4 were XY females. The 15 patients underwent 31 vaginal procedures including ileal vaginoplasty, mobilisation of perineal skin flaps and split-skin grafting. Three patients required

osteotomies to increase pelvic outlet diameter. The commonest complications were stenosis (6 patients) and fistula formation (4 patients). 8 patients are now sexually active; the remaining seven have not attempted sexual intercourse.

CONCLUSIONS

Patients with complex congenital anomalies of the reproductive and genital tracts are increasingly surviving into adulthood and the numbers of these patients is likely to increase in the future. This group of young women require multiple repeat operations to achieve a patent vagina.

#-113 (SO)

Long-term-follow up study in CAH women; correlation to surgery

GUNDELA HOLMDAHL, AGNETA NORDENSKJOLD*, LOUISE FRISÉN†, HELENA FILIPSSON‡, HENRIK FALHAMMAR¶, MARJA THORÉN¶, PER-OLOV JANSON§ and KERSTIN HAGENFELDT^f

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PURPOSE

The overproduction of androgens in girls with CAH leads to virilisation of the external genitalia. Feminising surgery including clitoroplasty and vaginoplasty is mostly performed during childhood. Many

of these children are lost to follow-up for the Paediatric Surgeon and there is a lack of knowledge on the functional aspects of the genitalia during adult life. In a national study (Stockholm-Gothenburg) adult women with CAH have been investigated for the postoperative result.

MATERIAL AND METHODS

Sixty-two women 18-63 years of age have been examined gynaecological. The cosmetic and functional results have been correlated with surgical methods and number of surgical procedures.

RESULTS

47 women had been operated, more than 50% had been operated at two or more occasions. 11 patients had only vaginoplasty done and in the remaining women it was combined with clitoroplasty. The cosmetic appearance as

well as the function of clitoris and vagina are often not optimal. There is also a need from these patients to be able to discuss former surgery, especially since it was common in this group to state that the functional result has influenced their sexual life negatively

CONCLUSIONS

This study emphasize the importance of long term follow up of girls with CAH in order to be able to improve the paediatric surgical care concerning indications, timing and methods

#-114 (LO)

Genital sensation following childhood feminising genitoplasty

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PURPOSE

Children born with ambiguous genitalia routinely undergo feminising genitoplasty surgery consisting of clitoral reduction and vaginoplasty in order to achieve a more feminine appearance. This standard practice of childhood surgery remains highly controversial, with little known regarding long-term outcomes. Until now there has been no objective data on sensation to the genital area following such procedures.

MATERIAL AND METHODS

We recruited 28 adult women with 21-OH Congenital Adrenal Hyperplasia (CAH), who had undergone feminising genital surgery in childhood, in order to assess

clitoral and vaginal sensation. Seven normal controls without CAH or a history of genital surgery were also recruited. Thermal and vibratory thresholds were assessed using a GenitoSensory Analyzer (GSA Medoc Ltd).

RESULTS

Clitoral testing demonstrated a significant difference between the two groups for threshold sensation to warmth ($p = 0.002$), cold ($p < 0.001$) and vibration ($p = 0.037$), with the CAH group having poorer sensation. Sensation was measured to the upper vagina, which had not been surgically corrected, in 18 patients and 6 controls, with no significant difference observed between the two groups.

CONCLUSIONS

These results show that clitoral sensation is markedly impaired in women who have undergone feminising surgery in childhood, when compared with normal controls. No difference was observed when sensation was assessed in an area which had not been operated upon suggesting that impaired sensation is associated with previous surgery rather than an independent effect of CAH. Genital sensation is an important contributory factor to female sexual response. These striking findings must be evaluated further in light of the current contentious debate regarding the policy of routine childhood feminising genitoplasty.

#-115 (SO)

Long-term-follow up study in CAH women; correlation to mutations

AGNETA NORDENSKJOLD, LOUISE FRISÉN*, GUNDELA HOLMDAHL†, HELENA FILIPSSON‡, HENRIK FALHAMMAR¶, MARJA THORÉN¶, PER-OLOV JANSON§ and KERSTIN HAGENFELDT^f
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PURPOSE

Congenital adrenal hyperplasia, CAH, is caused by an enzyme deficiency of 21-hydroxylase. This causes an

underproduction of cortisol and aldosterone and an overproduction of androgens. In girls the overproduction of androgens leads to a virilization of the external genitals that is surgically

treated. The disorder is autosomal recessively inherited and has a well characterised mutational spectrum, well correlated to the initial phenotype. We wanted to further study the correlation

between mutations and the conditions later in life for women with CAH.

MATERIAL AND METHODS

In a national study in Stockholm-Göteborg we have examined 62 women with CAH and over 18 years of age. We have collected data on mutations and compared with data concerning surgery,

fertility as well as psychosocial and psychosexual quality of life

RESULTS

Twenty-nine women had mutations causing a salt-wasting phenotype; of these were 13 null-mutations. Twenty-three had a simple virilizing form of CAH and 7 were "non-classic". The severity of mutations correlates well with several parameters

concerning quality of life in adults. More severe mutations affect both fertility, number of surgical procedures and diminish quality of life

CONCLUSIONS

This study underlines the importance of mutational screening in order to give adequate information on both immediate and later prognosis in life for these girls

Friday, 17 June 2005: 10:30–11:00

S15: Dysfunctional voiding

Chair: T. de Jong, D. Bloom

#-116 (P)

Correlating dysfunctional voiding symptom scores with uroflowmetry / electromyography patterns and post void residual urine volumes in children

DONALD BARTKOWSKI and RUSSELL DOUBRAVA

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PURPOSE

The aim of this study was to determine if DV as defined by the Dysfunctional Voiding Symptom Score has a positive correlation with its urodynamic definition proposed by the International Childrens Continence Society.

MATERIAL AND METHODS

Between March 2003 and March 2004, 91 children, 4 to 13 years of age completed a DVSS questionnaire, and underwent simultaneous uroflowmetry/ electromyography and post void residual urine measurement. The urodynamic results of 51 children considered asymptomatic and having a normal DVSS for gender (group A) were compared to 46

symptomatic children having an abnormal DVSS (group B).

RESULTS

Group A consisted of 34 females and 17 males (F: M of 2:1) with a mean age of 8.3 years. Group B consisted of 37 females and 9 males (F: M of 5.6:1) with a mean age of 7.5 years. Mean DVSS for females and males in group A was 2.2 and 2.4 respectively, and in group B was 13.4 and 15.0 respectively.

In group A, 14 of 51 (27.4%) children had an expected normal uroflow and EMG pattern, while 10 of 51 (19.6%) children had a uroflow and EMG pattern consistent with DV. Elevated post void residual urine

volumes were noted in 19 (37.25%) children.

In group B, 25 of 46 (54.3%) children had an expected abnormal uroflow and EMG pattern consistent with DV, while 6 of 46 (13.0%) had both a normal uroflow and EMG pattern. Post void residual urine volumes were normal in 17 (36.9%) children.

CONCLUSIONS

Positive correlation between a normal DVSS, uroflow/EMG and PVR, and abnormal DVSS, uroflow/EMG and PVR was inconsistent. These results fail to correlate the symptomatic diagnosis of DV, with the urodynamic diagnosis, the pathophysiology of this condition.

#-117 (PWP)

Animated biofeedback yields similar but more rapid results than non-animated biofeedback

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PURPOSE

Biofeedback is known to effect symptomatic and objective cure to children with detrusor-sphincter discoordination (DSD). While some authors advocate animation-assisted biofeedback to achieve success, we previously demonstrated similar success without animation. We recently employed an animated biofeedback program aimed at simplifying muscle isolation and

encouraging patient interest. We compared our biofeedback experiences with and without animation.

MATERIAL AND METHODS

We compared our experience with the last 30 cases of biofeedback using EMG alone (group A) with our first 30 cases using Laborie's Urostym Pediflow animated program (Group B). All 60 children presented with urinary complaints and

demonstrated DSD on EMG-uroflow. Post-void residual measurements were made by ultrasound. We compared the two groups regarding symptoms, DSD, post-void residual, and time to cure.

RESULTS

Group A and Group B were comprised of girls of similar age (7.3 yrs. vs 6.9 yrs.). There was no significant difference between the two groups regarding

symptom relief: daytime incontinence (A=94%, B=92%), frequency (A=94 %, B=93%), urgency (A=92 %, B=90 %). DSD resolved in 95% for both groups. PVR reduction was similar: from 31% to 9% in Group A and from 28% to 8% in Group B. Children in Group B (animated biofeedback — 3 sessions) achieved success in significantly fewer sessions than

children undergoing biofeedback without animation (Group A — 6 sessions) ($p < 0.05$, t-test)

CONCLUSIONS

Despite our proven experience without animated biofeedback systems and our

inexperience with an animated system, animated biofeedback systems yielded similar results in a significantly shorter time. Animation engaged the children facilitating rapid muscle isolation thus promoting patient success.

#-118 (SO)

High intensity, short term biofeedback in children with Hinman's syndrome

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PURPOSE

This study evaluates the long-term response of high intensity, short term biofeedback on children with severe voiding dysfunction.

PATIENTS AND METHODS

We retrospectively reviewed patients that underwent short term, high intensity biofeedback therapy from 1996 to 2004 and analyzed their short and long-term (up to 8 years) response. Improvement was classified based on clinical and radiographic findings. Patients were categorized as having Hinman syndrome when at least 4 of the following categories were present: sphincter dyssynergia,

bladder trabeculation, large post void residual, hydronephrosis or vesico-ureteral reflux and urinary tract infections.

RESULTS

Fourteen patients (8 males and 6 females) were included. 13 (93%) had Hinman syndrome. Age when biofeedback started varied from 5.6 to 12.9 years (mean 8.9). Before biofeedback, the average post void residual (PVR) was 109 ml (25 to 270ml). All had bladder trabeculation and sphincter dyssynergia. Nine patients (64%) had hydronephrosis and 5 (36%) had VUR. One patient had renal failure. All 14 patients were able to relax their external sphincter and reduce the PVR during

biofeedback and on short-term follow-up (average PVR 21 ml), including 2 patients that eventually failed treatment. Long-term follow-up (mean 59.4 mos) in 12 (86%) patients established that seven (58%) had a durable response with remission of symptoms, reduced PVR and radiographic improvement. In 3 (25%) symptoms partially recurred over time and 2 (17%) failed treatment completely.

CONCLUSIONS

Short term, high intensity biofeedback achieves a durable response in the majority of children with Hinman's Syndrome. Long-term follow-up is needed to assure compliance.

#-119 (SO)

Botulinum A toxin urethral sphincter injection in children with non-neurogenic neurogenic bladder

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PURPOSE

To evaluate Botulinum A toxin (Botox®) injection into the urethral urinary sphincter in children with non-neurogenic neurogenic bladder to reduce urethral resistance and improve voiding as an alternative to alpha blocker medications and biofeedback.

MATERIAL AND METHODS

Prospective treatment was performed on 10 children with non-neurogenic neurogenic bladder age range between 6-17 years (mean age=8) using Botulinum A toxin (Botox®). Preoperatively, all children were evaluated by U/S, VCUG, IVP, MRI and urodynamic studies including

pressure flow, EMG and uroflowmetry. One patient had unilateral reflux G3 and four patients had bilateral hydronephrosis (G1 to G4). Using a rigid pediatric endoscope and a 4 Fr. injection needle, 50 to 100 I.U. of Botulinum A toxin were injected into the external sphincter at the 3, 6 and 9 O'clock positions. Follow up ranged from 3 to 6 months. Repeated injections every

month were given according to the response with a maximum of 3 injections.

RESULTS

Immediately after Botulinum A toxin injection all but 1 patient were able to void without catheterization. No acute complications occurred. Three patients with bilateral hydronephrosis and the

patient with the refluxing unit showed regression. Postoperative post-voiding residual urine decreased by 81%, maximum voiding pressure decreased significantly (75 ± 40 vs 30 ± 23 cm H₂O) and uroflowmetry showed marked increase in Q_{max} (4 ± 4 vs 18 ± 8 ml/sec). One patient needed 3 injections to reach the desired response.

CONCLUSIONS

Urethral sphincter Botulinum A toxin (Botox®) injection could be considered as a reliable treatment modality in children with non-neurogenic neurogenic bladder.

#-120 (P)

Structural basis of voiding dysfunction in megacystis microcolon intestinal hypoperistalsis syndrome

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PURPOSE

Megacystis-microcolon intestinal hypoperistalsis syndrome (MMIHS) is a rare congenital and generally fatal condition of unknown etiology. This syndrome is characterized by abdominal distension caused by a distended, non-obstructed urinary bladder and intestinal hypoperistalsis with functional intestinal obstruction. Infants with MMIHS fail to void spontaneously. Some reports have described pathological changes in the smooth muscle cells (SMCs) in the bowel and bladder of patients with MMIHS. The aim of this study was to examine the expression of contractile, cytoskeletal and extracellular matrix proteins in the detrusor muscle in order to gain insights into the basis of voiding dysfunction in this syndrome.

MATERIAL AND METHODS

Bladder specimens were obtained from six MMIHS patients. Normal bladder specimens obtained during cystectomy served as controls. Single enzyme and fluorescence immunohistochemistry for α -smooth muscle actin (α SMA), desmin, dystrophin, vinculin and collagen type I and III were carried out. Furthermore, specific connective tissue stains (trichrome Masson, van Gieson) were performed. Light, fluorescence, confocal laser scanning microscopy and electron microscopy were employed.

RESULTS

Trichrome Masson and van Gieson staining demonstrated markedly increased amount

of collagen between the detrusor smooth muscle fibres of MMIHS patients compared to controls. Collagen type I immunoreactivity was markedly increased in MMIHS compared to controls. α -SMA, desmin, vinculin and dystrophin immunoreactivity was markedly reduced in MMIHS compared to controls. Electron microscopy revealed vacuolar degenerative changes in the centre of smooth muscle cells and abundance of collagen between the smooth muscle cells.

CONCLUSIONS

Voiding dysfunction in MMIHS is most likely due to severe structural abnormalities observed in the detrusor muscle of these patients.

Friday, 17 June 2005: 11:00–11:40

S16: Nocturnal enuresis

Chair: T. Neveus, M. Packer

#-121 (LO)

Sleep pattern and cortical arousal in enuretic children: a comparison with non-enuretic normal children

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PURPOSE

Previous research have shown that sleep pattern in enuretic children were similar to normal children. The aim of this study is to re-evaluate the sleep pattern and cortical arousal in both enuretic and non-enuretic children, and to investigate any possible interrelationship between arousal inability and bladder instability in children with nocturnal enuresis (NE).

MATERIAL AND METHODS

Twenty-five enuretic children (M/F:20/5, mean age 9.5 years) with severe NE, and 21 age-matched non-enuretic children were recruited. Overnight simultaneous electroencephalographic (EEG) and cystometric monitoring were conducted during sleep. Sleep stages, EEG (cortical) arousal episodes, bladder unstable contractions, NE episodes and volume in

enuretic children were recorded. Sleep stages and EEG arousal in all subjects were evaluated in collaboration with our Sleep Assessment Unit. Analysis included Student's t-test and Pearson's correlation, with $p < 0.05$ considered significant.

RESULTS

Light sleep stage in enuretic children was significantly higher than non-enuretic group (56.0% vs 50.3%, $p < 0.05$). This difference was especially marked in sleep stage 1 (9.1% vs 5.3%, $p < 0.05$). Deep sleep stage in enuretic children was lower than non-enuretic children but it did not reach statistical significance (26.8% vs 29.9%,). Arousal index (EEG arousal episodes/total sleep time in hour) in enuretic children was significantly higher than non-enuretic group (6.31 vs 3.90, $p < 0.01$), i.e. EEG arousal episodes occurred more frequently in enuretic

children. EEG arousal episodes and arousal index were positively correlated to bladder unstable contractions ($p < 0.01$).

CONCLUSIONS

Our results suggest an interaction between central nervous system regulation of arousal and bladder instability may be implicated in the etiology of nocturnal enuresis. Enuretic children with nocturnal bladder instability have more light sleep and frequent cortical arousal episodes without successful triggering of complete awakening, suggesting that transition from light sleep to complete awakening, as elicited by the arousal center, may be paradoxically suppressed by long-term over-stimulation by signals from the bladder.

#-122 (LO)

Brainstem and bladder dysfunctions in nocturnal enuresis

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PURPOSE

To assess brainstem and bladder dysfunctions and their correlation in children with nocturnal enuresis (NE).

MATERIAL AND METHODS

Fifty-two children (M/F:37/15, mean age 9.2 years) with severe NE were prospectively recruited. Fifteen age-matched non-enuretic children without

any urinary symptoms or mental disorder were recruited as control. Prior to hospital admission, three-day detailed voiding diary and continuous home recording of NE frequency and volume were collected. Conventional fill cystometry (CFC),

overnight polysomnographic and cystometric monitoring were conducted for NE children. Brainstem function was evaluated by sleep arousal threshold, prepulse inhibition (PPI) of startle amplitude and P300 event-related brain potentials (ERPs) latency in all subjects. Analysis involved Student's t-test and Pearson's correlation, with $p < 0.05$ considered significant.

RESULTS

Thirty eight (73.1%) enuretic children were found to have a reduced FBC (mean ratio of FBC in daytime CFC/age expected FBC:

44.1%), with 90% demonstrated OAB. Sleep arousal threshold was significantly higher (113 dB vs 100 dB, $p < 0.01$); and the ratio of conscious arousal episodes to total awakening attempts was significantly lower in enuretic children versus non-enuretic group (31.5% vs 91.4% $p < 0.01$). PPI of startle amplitude following single startle stimuli with pre-stimulation 120 ms in enuretic children was significantly higher than non-enuretic group (22.47 μ V vs 13.16 μ V, $p < 0.01$). P300 ERPs latency in enuretic children was significantly longer than normal controls (362 ms vs 321 ms, $p < 0.01$). Lower functional bladder capacity (FBC) in daytime urodynamics

negatively correlated to higher sleep arousal threshold, which itself negatively correlated to less conscious arousal episodes ($p < 0.05$).

CONCLUSIONS

Bladder capacity reduction associated with bladder instability was a main factor in the pathophysiology of NE. Special brainstem dysfunction with significant correlation to the underlying abnormal bladder function has been revealed in NE. Further research on how bladder and brain dysfunctions interact is warranted.

#-123 (PWP)

Nocturnal enuresis in adolescents and adults is associated with childhood elimination symptoms

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PURPOSE

Nocturnal Enuresis in adults and adolescents is a poorly understood disorder and, until recently, was not believed to be associated with long-term underlying bladder dysfunction. The aim of this study was to identify the prevalence of childhood bladder and bowel dysfunction in this population and to compare findings to those from a normative cohort.

MATERIAL AND METHODS

A 42 item bladder and bowel dysfunction questionnaire was self-administered to 56 consecutive adolescents and adults attending a public nocturnal enuresis service and to 293 normative adults. Data sets from the normative cohort reporting

current bladder problems were excluded. Descriptive statistics, chi squared and Kruskal-Wallis tests were used to compare variables

RESULTS

Adolescents and adults with nocturnal enuresis (AANE) had significantly higher childhood scores than normative adults (median 5, IQR 3-6 versus median 1, IQR 0-2; $p < 0.001$). A childhood symptom score of $> 4/20$ was seen in 62.5% of AANE versus 19% of normative subjects. Childhood urinary symptoms reported significantly more often by AANE included: RUT1, urgency, frequency, urge incontinence, intermittent urine flow, small volume high urge voids. Infrequent and painful bowel actions and faecal soiling in childhood were also significantly

more common in AANE than in control subjects. Higher childhood scores in AANE correlated significantly with the current adult symptoms of urge leak ($r: 0.399, p=0.003$) and recent UTI ($r: 0.413, p=0.002$).

CONCLUSIONS

This is the first report of significant childhood dysfunctional bladder and bowel symptoms in the AANE population. The association with adult urgency and UTI supports the recent report of underlying bladder and voiding dysfunction (Yeung et al J Urol 2004 171(June):2595-8), and the suggestion that AANE patients undergo intensive urodynamic evaluation to identify any co-existing bladder pathology.

#-124 (SO)

Association of elimination dysfunction and body mass index

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PURPOSE

The reported prevalence of mild and severe obesity in US children is 30% and

15% respectively. Childhood obesity likely relates to alterations in diet that also may cause constipation. We investigated the relationship between

obesity and various forms of elimination dysfunction in patients seen in our office.

MATERIAL AND METHODS

155 patients were diagnosed as having voiding dysfunction and evaluated in our office between Jan 1, 2004 and Sept 30, 2004. Each patient's age, weight, height and diagnosis were evaluated retrospectively and body mass index (BMI) was calculated. The percentile BMIs were then analyzed based on diagnosis. BMI percentile $\geq 85\%$ was defined as mild obesity and BMI percentile $\geq 95\%$ was defined as severe obesity. The patients were divided into 3 groups based on

diagnosis: enuresis +constipation (n=21), diurnal enuresis (n=70) and nocturnal enuresis (n=64).

RESULTS

The mean age of the patients was 9.4 years (range 4 to 18 years). In the group with enuresis and constipation, 8/21 (38%) had mild and 5/21 (24%) were found to have severe obesity. Of patients with diurnal enuresis, 36/70 (51%) were mildly and 22 (31%) severely obese and of those

with nocturnal enuresis alone, 35 (55%) were mildly and 20/64 (31%) severely obese.

CONCLUSIONS

62-86% of children with voiding dysfunction are also obese. This is almost double the rate in the normal population. These conditions may have some common etiologies.

#-125 (SO)

Pharmacodynamic study using a new 'melt' formulation of desmopressin in children with PNE

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PURPOSE

The antidiuretic desmopressin is an effective treatment for PNE, being particularly beneficial for children with relative nocturnal polyuria and normal functional bladder capacity. Despite widespread use, the dose of desmopressin is not standardized, and pharmacokinetic data are extremely limited in children. The spray has a rather unpredictable resorption, while the tablet has a very low bioavailability. A new oral lyophilisate of desmopressin (Minirin®Melt) is being developed to provide an alternative formulation, a wafer that dissolves instantly in the mouth.

MATERIAL AND METHODS

A dose-ranging pharmacodynamic study was conducted to identify doses of desmopressin 'melt' providing a duration of action corresponding to the time a child spends asleep. This placebo-controlled study in 84 children with PNE, aged 6–12 years, employed an overhydration technique prior to dosing to suppress endogenous vasopressin production; urinary volume, osmolality and duration of urinary concentrating action above three (arbitrary) thresholds were determined as endpoints.

RESULTS

The oral lyophilisate of desmopressin, in doses from 30–480 micrograms resulted in

a fall in urinary output and increase in mean urinary osmolality within 1 hour. The mean duration of action lasted to over 10 hours according to dose and osmolality threshold. The formulation was well tolerated.

CONCLUSIONS

This, the first large dose-response study with desmopressin in children, demonstrates that a melt formulation can result in highly predictable pharmacodynamic effects. Significantly lower doses (120–240 micrograms desmopressin) than with the oral tablet can control diuresis for 7–11 hours, the length of time children sleep at night.

#-126 (LO)

Prospective follow-up of efficiency and relapse rate of the treatment options for nocturnal enuresis: desmopressin + tolteridine and the full spectrum therapy

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PURPOSE

Aim of this study is to compare the effect desmopressine+ tolteridine and the full spectrum therapy, a combination therapy with alarm, bladder training, motivational therapy, pelvic floor muscle training and overlearning for nocturnal enuresis.

MATERIAL AND METHODS

135 children (5-23 yrs) consulted for nocturnal enuresis and were offered three treatment possibilities: desmopressine + tolteridine (60/135), full spectrum therapy (63/135), and 12/135 children (age 5 or 6 years) preferred waiting. Children were followed up for at least 12 months. Time to become dry and relapse rates are compared. In addition, patient motivation (social circumstances), arousability, functional bladder capacity,

clinical overactive bladder and nocturnal urine production are compared.

RESULTS

26/60 children (43.3%) treated with desmopressine+tolteridine were dry after six months but 4/60 (6.7%) were dry after discontinuing the medication. 22/60 continued the medication and remained dry. 12/60 had a decrease in number of wet nights, 16/60 (26.7%) were non-responders from beginning and 6/60 discontinued. One year after starting the treatment, 30/60 children (50%) were dry: 13 (21.7%) without and 17/60 with medication. 56/63 children (88.9%) following full spectrum therapy became dry within 6 months of treatment. The mean duration to become dry was 49.5 days. 3/63 children improved but didn't reach the success criterion of 14

consecutive dry nights and 4/63 children discontinued the treatment. One year after treatment, 12/63 children of the total group (19.1%) were wet (relapse and non responders). 5/12 children (41.7%), age 5-6yr who decided to wait became dry within one year. Patient motivation (social circumstances), arousability, bladder capacity, nocturnal urine production or clinical overactive bladder were no selection criteria for success.

CONCLUSIONS

Full spectrum therapy is the most efficient therapy for nocturnal enuresis and has the lowest relapse rate. Desmopressin+ tolteridine is a good alternative and it should be offered as initial therapy option to the child and the parents.

Friday, 17 June 2005: 13:30–14:15

S17: Vesicoureteral reflux 1

Chair: D. Rohrman, M. Koyle

#-127 (P)

Urothelial differentiation in vesico ureteric reflux: implications for non-invasive screening

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PURPOSE

VUR has been produced in mice with 100% transmission following ablation of the gene for Uroplakin III - a urothelial protein expressed from early gestation (Hu et al. J Cell Biol. 2000). We sought to determine whether the characteristic urothelial abnormalities seen in this experimental model of VUR are also present in humans. This finding could form the basis of a non-invasive screening test for VUR, using urinary cytology to identify markers of abnormal urothelial differentiation.

MATERIAL AND METHODS

Urothelium was obtained from twenty-four children at open surgery: Thirteen

had primary VUR (8 males and 5 females, mean age 5.3 years), with grades II to V VUR. Four children had secondary VUR (PUV, duplication) and 7 children had non-refluxing disorders, notably PUJ obstruction. Morphology and differentiation were studied by light microscopy and by immunohistochemistry to detect the expression of Uroplakin (UP) III, UPIa, UPIb, Cytokeratin (CK)13 and CK20. Anonymised photomicrographs were independently ranked by two authors and the results analysed statistically using the Kruskal–Wallace non-parametric test.

RESULTS

No objective differences in morphology, differentiation or expression of UPIII, UPIa, UPIb, CK13 or CK20 were present between primary VUR, secondary VUR and non-refluxing controls ($p = 0.168-0.651$).

CONCLUSIONS

Primary VUR is not associated with abnormal urothelial differentiation and there is no evidence that Uroplakin III is implicated in human VUR. Urinary cytology is unlikely to form the basis of a non-invasive screening test for VUR.

#-128 (LO)

Renal status as a predictor for spontaneous resolution of congenital high-grade infantile vesicoureteral reflux

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PURPOSE

Renal damage has been suggested as a negative prognostic factor for resolution of high-grade vesicoureteral reflux (VUR) in infants. We therefore followed infants <1 year of age at diagnosis with such VUR

to study the importance of renal damage for long-term outcome.

MATERIAL AND METHODS

115 infants (80 boys and 35 girls) with dilating VUR were included (median age

2.7 months), 74% diagnosed after urinary tract infection and 26% prenatally. VUR was bilateral in 70% and of maximum grade III in 15%, grade IV in 45% and grade V in 40% of the children. Patients were followed for a median of 4 years in a program including repeated

videocystometries, free voiding studies, renal scintigrams (DMSA and MAG-3) and 51Cr-EDTA-clearance.

RESULTS

Renal damage at inclusion was seen in 88% of the children, being unilateral in 75% and bilateral in 25%, generalised in 75% and focal in 25%. Renal damage was significantly correlated to non-resolution

of VUR, but no difference was seen between uni- and bilateral damage. 51Cr-EDTA-clearance was decreased in 40% and correlated to non-resolution of reflux. Furthermore, bladder dysfunction was a factor strengthening the connection between renal damage and non-resolution (multivariate analyses). Progression of damage during follow up occurred in only 8%.

CONCLUSIONS

Infants with high-grade VUR have a high incidence of renal damage and many also have low renal function. These factors are negative prognostic factors for spontaneous resolution of reflux, in parallel to what has been found for bladder dysfunction and recurrent urinary tract infections.

#-129 (P)

Dimercaptosuccinic acid scan can predict clinically significant vesicoureteral reflux in infants with febrile urinary tract infection

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PURPOSE

Infants with febrile UTI are particularly susceptible to permanent renal damage. Retrospective studies indicate DMSA scan can predict clinically significant vesicoureteral reflux in children with febrile UTI. As such, with a normal DMSA scan after a febrile UTI, VCUG can be avoided without compromising renal risk. We have shown this in toilet trained children. This report prospectively examines this hypothesis in infants with febrile UTI.

MATERIAL AND METHODS

Over a 35-month period we entered 30 infants (<2 years old - in diapers) presenting with a febrile UTI into

a prospective series. Twenty-seven infants had complete medical records at the end of the study period. All infants with anatomic or neurologic genitourinary abnormality were excluded. All infants had a DMSA scan (with SPECT) in the first 72 hours of the onset of fever. VCUG was subsequently performed, and repeat DMSA scan was performed at 3-6 months. All infants received prophylactic antibiotics. Results of VCUG and DMSA scans were recorded and compared according to the highest grade of reflux per infant.

RESULTS

Eighteen (67%) infants with febrile UTI had positive initial DMSA scans indicating acute pyelonephritis. Sixteen (59%) had VUR, and 11 (41%) had renal scars on DMSA scan at 3-6

months. VUR was grade I in 1 infant, grade II in 2, grade III in 7, grade IV in 5, and grade V in 1. All infants with grades I-II VUR had normal initial and repeat DMSA scans. Ten (77%) infants with grades III-V VUR had abnormal initial DMSA scans. The remaining 3 infants (grade III-IV VUR) had normal initial and repeat DMSA scans. All 3 of these infants were < 6 months old.

CONCLUSIONS

In this series, DMSA scan predicted clinically significant VUR in all infants with low grade VUR and infants > 6 months old regardless of grade of VUR. However, since 3 infants < 6 months old had grade III-IV VUR with a negative DMSA scan, we recommend for infants < 6 months old with febrile UTI, a VCUG be performed.

#-130 (SO)

The impact of febrile status and dysfunctional elimination symptoms on the likelihood of finding vesicoureteral reflux (VUR)

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PURPOSE

Voiding cystourethrogram (VCUG) is an invasive and uncomfortable test. Indications for obtaining a VCUG have been loosely defined. This study looks at the likelihood of having a positive VCUG based on patient symptoms.

MATERIAL AND METHODS

Radiology records of all children undergoing a first VCUG during a 5-year period were reviewed retrospectively at a large metropolitan children's hospital. Data collected included indication for VCUG, clinical evidence for urinary

infection, symptoms of dysfunctional elimination (DES), sex and age. Patients who had no history of UTI were excluded from analysis. Data was analyzed using Fisher's Exact Test, two tailed with a 95% confidence interval.

RESULTS

88 of 147 children with febrile UTI had VUR (60%), while 25 of 67 with nonfebrile infection had reflux (37%) ($p=.003$). Dilating reflux was seen in 34% and 12% of these groups, respectively ($p=.0008$). 92 of 149 (62%) of children with no symptoms of DES had reflux, as compared to 22 of 71 (31%) children with

DES ($p<.0001$). 35% without DES and 9.9% with DES had dilating reflux ($p<.0001$). 68% of 111 children with febrile infection and no DES symptoms had reflux, while 26% of 35 with nonfebrile infection and DES had reflux ($p<.0001$). These groups had 41% and 5.7% dilating reflux respectively ($p<.0001$).

CONCLUSIONS

These data suggest children with DES and nonfebrile infection are unlikely to have reflux, and thus may not require VCUG unless there are other indications, such as abnormal ultrasound findings. Among children with a history of UTI, DES is a significant negative predictor of vesicoureteral reflux.

#-131 (P)

Familial vesico-ureteral reflux in Iceland

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PURPOSE

Vesicoureteral reflux (VUR) as a partly hereditary disorder has conclusively been shown in e.g. sibling studies, but the pattern of inheritance is still a matter of debate. Iceland has a unique opportunity to investigate genetic background of hereditary disorders, since all Icelandic inhabitants are included in a genealogical table since the 900 century, all stored in a database. Therefore, in the present study VUR patients were identified and put into this pedigree and analyses conducted to determine whether VUR patients on Island are more related to each other than other members of the population.

MATERIAL AND METHODS

508 children admitted to the pediatric unit at Landspítalinn University Hospital, Iceland, 1984 – 2000, were included. A random selected group of 1000 healthy children was used as a control group. With the use of the above-mentioned extensive database, kinship coefficients were calculated and difference between the two groups, in different relative degrees, were calculated as risk ratio (RR). $RR > 1$ means increased risk. Relatives degree 1 = parents and siblings, degree 2 = cousins etc.

RESULTS

The VUR-patients were more related to each other, than to other members of the

population. RR for relatives degree 1 was 8.1, relatives degree 2 was 2.72, relatives degree 3 was 2.42, relatives degree 4 was 1.56, relatives degree 5 was 0.94 and relatives degree 6 was 1.12.

CONCLUSIONS

Icelandic children with VUR were significantly more related to each other than children in the matched group of controls, indicating the genetic origin of the disease. More complicated mode of inheritance than single dominant gene inheritance is likely, probably with involvement of more than one gene.

#- (132)SO

Familial vesicoureteral reflux: influence of sex on prevalence

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PURPOSE

Familial clustering of vesicoureteral reflux (VUR) implies that genetic factors have an important role in the pathogenesis of VUR. The purpose of this study was to investigate the impact of gender on familial VUR.

MATERIAL AND METHODS

159 Caucasian families with at least two children (range 2 to 5) with VUR confirmed by a voiding cystourethrogram were divided into three groups: Group I, families with only boys affected ($n=29$, 18%), Group II, families with only girls

affected ($n=57$, 36%) and Group III, families with boys and girls affected ($n=73$, 46%). The clinical characteristics, reflux grade and associated renal anomalies of these three groups were compared using Mann-Whitney-U and Chi-square test.

RESULTS

Sisters of index female patients had a significantly higher risk to have VUR than brothers ($p < 0.01$). Boys in Group I had a significantly higher grade of VUR than boys in Group III ($P < 0.01$), girls in Group III ($p < 0.001$) and girls in Group II ($p < 0.0001$). Duplex kidneys were present in 15.3% of boys in Group I, but only in 2.3%

of boys in Group III ($p < 0.01$), 5.7% of girls in Group III and 5.8% girls in Group II. Age at diagnosis was not significantly different between boys in Group I (median 0.9y) and boys in Group III (0.6y) and girls in Group II (1.9y).

CONCLUSIONS

The risk for VUR and the severity of VUR in siblings is dependent upon the sex of the affected child. Brothers of index male patients have higher grade of reflux and higher rate of associated duplex systems. This has implications for genetic counselling and modelling the inheritance of VUR.

Friday, 17 June 2005: 14:15–14:45

S18: Hypertension - renal transplantation

Chair: P. Perreira-Lopez, D. Hatch

#-133 (P)

Unilateral partial ureteric obstruction causes hypertension in the rat

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*Pediatric urology, Pediatric surgery, Uppsala, SWEDEN - * Biomedial Centre, Physiology, Uppsala, SWEDEN***PURPOSE**

Hypertension is secondary to renal disease in 5-10% of all cases. Hypertension secondary to hydronephrosis is not commonly seen but has been sporadically described. In previous animal experiments in our laboratory an altered tubuloglomerular feedback (TGF) response in hydronephrotic kidneys has been described. The TGF pattern is identical to that seen in spontaneously hypertensive rats prior to development of hypertension. To test whether causality between hydronephrosis and hypertension exists, the following experiments were carried out.

MATERIAL AND METHODS

Twelve Sprague Dawley rats underwent partial unilateral ureteric obstruction at three weeks of age using the Ulm-Miller psoas groove technique. One month later a telemetric blood pressure device was inserted into the aorta and abdomen. Ten shamoperated animals served as controls. Telemetric blood pressure recording was commenced after one week and continued intermittently for three months. Blood samples for Renin analysis were taken at termination of the measurements.

RESULTS

Significant hydronephrosis developed in all cases. All experimental animals developed hypertension (mean 20 mm Hg) proportional to the degree of hydronephrosis which progressed slightly with time. Night-to-day blood pressure changes were diminished. Renin levels will be analysed.

CONCLUSIONS

Unilateral partial ureteric obstruction causes hypertension in the rat. The mechanism may be deficient volume control or Renin/Angiotensin activity.

#-134 (SO)

Kidney transplantation in small patients with live related donors: 20 years of experience

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PURPOSE

Kidney transplantation (Tx) with a live related donor is the best option available nowadays for treatment of end stage renal disease. The new options in peritoneal dialysis, treatment of rejection and viral infection had improved the final results. We report here our experience with Tx with live related donors in this complex group of pediatric patients.

MATERIAL AND METHODS

Since 1978 to April 2004 a kidney transplantation was performed in 211 patients, from this group 23 patients between 1 and 10 years old (16 males and 7 females) and less than 17 kg of weight (8,9-16,9 kg) received their first lived related donor transplantation between 1985 and 2004. Renal insufficiency was secondary to nephrological pathology in 11, infravesical obstruction in 6 and renal

dysplasia or vascular disease in 6 patients respectively.

RESULTS

Patients and graft survival were 100% and 95,6% with an average follow up of 89,6 months (r: 6 - 231). There were no vascular or urologic complications. Urinary infection in 5 (21.7 %) and acute rejection in 3 (13%) were the more common complications. One patient has returned to dialysis 11 years after Tx.

CONCLUSIONS

A patient with low weight did not condition a higher percentage of postoperative surgical complications,

results in the short and long follow up are similar to older patients. A corrected serious urologic malformation is not a limit for a living related Tx. These results estimate to perform more

frequently these type of procedures in younger patients when live donors are available.

#-135 (P)

Double renal transplantation — a strategy with under 3 year old donors

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PURPOSE

So as to provide a more adequate renal mass for older paediatric recipients, as well as improve survival of grafts from donors under three years of age, because in our experience the long term results with single graft are poor, it was decided to use both kidneys in the same recipient.

MATERIAL AND METHODS

Seven patients received a double kidney transplant from an under-three-year-old donor (mean age 2.7 years). The primary renal disease was obstructive uropathy (2 p), haemolytic uraemic syndrome, tuberous sclerosis, nephronoptosis,

vesicoureteral reflux and nephrotic syndrome, 1p each one. Recipients ranged from 14 to 18 years of age and had a mean height of 165.2 cm. Five were in dialysis (average duration 3 years) and it was the second transplant for two. Both kidneys were sequentially placed in the same iliac fossa (on the right side in 5 p), the first kidney was placed the most cranially and the second more caudally. The surgical technique was similar to that used to place a single graft and an extraperitoneal approach was followed in all patients. Immunosuppression induction employed monoclonal antibodies followed by a triple therapy (Mofetyl micofenolate, steroids and Tacrolimus).

RESULTS

All of the grafts started diuresis immediately and there was no thrombosis in any patient. One patient lost both grafts due to a relapse of the primary disease. Another patient developed lymphocele one year post transplant and required laparoscopic drainage. The grafts in six patients are doing well with a follow up of 1-7 years.

CONCLUSIONS

A double transplant using both kidneys from donors under 3 years old can provide sufficient renal mass to produce an adequate renal function and does not present a higher risk of complications.

#-136 (V)

Bilateral laparoscopic nephrectomy with simultaneous peritoneal dialysis catheter implantation

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PURPOSE

Bilateral nephrectomy prior to transplantation is indicated in some patients with end-stage renal disease. The indications included persistent heavy proteinuria, refractory hypertension and urinary tract infections.

MATERIAL AND METHODS

We report an 8 month old baby with male pseudohermaphroditism and renal failure secondary to diffuse mesangial

sclerosis (DRASH syndrome). Awaiting renal transplantation the child presented standard drug therapy resistant hypertension and dialysis was necessary. These video images show a laparoscopy with simultaneous bilateral nephrectomy with omentectomy and placement of a peritoneal dialysis catheter. What is more, it was also possible to do a bilateral gonadectomy during our laparoscopy.

RESULTS

At the present time, the patient is doing well with ambulatory dialysis and all anti hypertensive medication was discontinued following the nephrectomy.

CONCLUSIONS

We recommend this technique in those children who require bilateral nephrectomy and peritoneal dialysis. It reduces postoperative pain and improves the esthetic appearance.

Friday, June 17 2005: 14:45–15:15

S19: Stones

Chair: H. Lottmann, A. Caldamone

#-137 (P)

Diagnosis of pediatric urolithiasis: role of ultrasonography and CT scan

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PURPOSE

The use of CT scan to diagnose urinary calculi in children has been debated due to the exposure to ionizing radiation. We studied the presentation and radiographic evaluation of children with urolithiasis to determine the accuracy of ultrasonography.

MATERIAL AND METHODS

A retrospective chart review of children referred to our tertiary care center for the evaluation of urolithiasis was performed. Data collected included demographic variables, presenting symptoms, results of

radiographic studies, and calculus location.

RESULTS

Seventy-seven patients were identified (median age 10.6 years). Fifty-four patients (70%) had symptoms of pain and/or gross hematuria. The majority of symptomatic patients (91%) had pain, with a CT scan and ultrasonography stone detection rates of 97% and 46%, respectively. Patients presenting with pain were more likely to have calculi located in the ureter alone compared to the kidney or both kidney and ureter. CT scan was highly accurate regardless of calculus location, detecting 90% of calculi

in the kidney alone, 100% in both the kidney and ureter, and 100% in the ureter alone. In contrast, ultrasonography detection of calculi was more variable, detecting 90% of calculi in the kidney alone, 75% in both the kidney and ureter, but only 38% in the ureter alone.

CONCLUSIONS

Ultrasonography failed to detect stones in 56% of symptomatic patients at the initial presentation of urolithiasis. CT scan should be the initial radiographic study in children with a classic presentation of renal colic, and in those children with persistent symptoms who had undergone ultrasonography as the initial study.

#-138 (LO)

Pre and post treatment ^{99m}Tc-DMSA renal scan to evaluate potential long-term parenchymal damage following extra corporeal shock wave lithotripsy (ESWL) monotherapy in 81 children

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PURPOSE

Purpose A prospective study was designed and initiated 16 years ago to assess the effects of extracorporeal shock waves on children renal parenchyma using pre and post treatment ^{99m}Tc DMSA renal scan (DMSA) .

MATERIAL AND METHODS

81 children (42infants) aged 5 months to 16 years (mean: 3.9 years) were treated for renal calculi. ESWL (one to three session per kidney with an interval of one month between each session)was performed using a Sonolith 3000

(Technomed :14 kV) (n=34) or a Nova (Direx:14-20kV) (n=47). The number of shocks delivered per session ranged from 600 to 3000 (mean 2648). DMSA was performed before treatment, and 6 months after the last session, with a prolonged follow-up of 1 to 5 years using 1 to 3 additional scans in 5 patients. Static

images, posterior, left and right oblique posterior, and lateral views were acquired 4 to 6 hours after iv injection of 1 MBq/kg weight of ^{99m}Tc DMSA using a parallel collimator, additional views using a pinhole were performed in the infants. Morphological analysis of renal uptake was reported, and relative renal uptake was quantified after background correction using a subrenal region of interest.

RESULTS

Overall stone free rate achieved 3 months after ESWL was 88% in the 81 patients and 95% in the infants subgroup. No major complications occurred. Pre and post ESWL DMSA were identical in 75/81 (92%) children, with a normal pre ESWL DMSA in 57/81 (70%) patients. In 18/81 (23%) patients pre ESWL DMSA was classified as abnormal because of either asymmetrical kidney uptake and size associated with a mild hypofixation in 11/18 or chronic pyelonephritis in 7/18 children. Changes

on serial DMSA were observed in 6/81 (7%) children, however no significant permanent loss of function or acquired parenchymal scar was identified on the treated kidneys.

CONCLUSIONS

ESWL is safe and effective for the treatment of paediatric urolithiasis. Renal parenchymal trauma associated with ESWL and as described in adults does not appear to cause long-term lesions identifiable by DMSA renal scan.

#-139 (PWP)

Ureteroscopy in infants and young children: indications and outcomes

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PURPOSE

Ureteroscopy for adolescents and older children is well documented, but reports of its use in infants and young children is limited. Presented here is data demonstrating the safe use of ureteroscopy in children less than or equal to 5 years of age.

MATERIAL AND METHODS

Twenty-one children (11 female, 10 male) ages 0.6-5 years (mean 3.1) have undergone ureteroscopy at our institution from 7/97 to 6/04. Either a 6.9 french semirigid (10 patients) or 7.4 french flexible (11 patients) ureteroscope was utilized. There were 12 ureteral (6 distal, 3 mid, 3 proximal) and 4 renal calculi, 4

obstructive uropathies (2 secondary UPJ, 1 primary lower pole UPJ, 1 congenital proximal ureteral stricture), and 1 foreign body removal. The Holmium laser was used for lithotripsy in 9 of 16 stones, and 3 of 4 incisional procedures. When necessary, dilatation was performed with a soft graduated dilator. Four children had prior urinary tract reconstruction (3 UPJ repair, 1 cross-trigonal reimplantation). All procedures were performed under general anesthesia. Post-operative radiographic assessment consisted of ultrasound, IVP or renal scan.

RESULTS

All ureteral and 3 out of 4 renal stones were successfully treated. One lower pole stone could not be dislodged from the

renal papilla. Post-operative drainage from obstructed systems was improved. Active dilatation was necessary in 9/17 (4 pre-stented), and stents were left at the conclusion of the procedure in 17/21. Procedures were either outpatient or overnight stays.

CONCLUSIONS

A variety of ureteroscopic procedures can be performed safely in infants and young children with minimal morbidity. Post-operative stenting is not always necessary but more information is needed to guide proper patient selection.

#-140 (SO)

Safety and outcome of rigid ureteroscopy for management of ureteral calculi in children

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PURPOSE

To present our experience with the use of rigid ureteroscopy for the treatment of pediatric ureteral calculi.

MATERIAL AND METHODS

The records of 32 children with an average age of 8.7 years (range 2 to 15 years) treated with rigid ureteroscopy between

June 1994 and July 2003 were reviewed. In 33 ureteral units, use of rigid ureteroscopy 8Fr was carried out 35 times in a retrograde manner to treat stone disease. Stones were located in the upper

ureter in 2 cases, middle ureter in 2 cases, and lower ureter in 29 cases. Dilatation of the orifice was necessary in 10 ureteroscopic procedures.

RESULTS

Stone size varied from 4 to 15 mm (mean 7mm). The management of stone in 29 (90.7%) children was straightforward and a single ureteroscopy was required to clear the ureters. In 2 (6.2%) children, repeat ureteroscopy was undertaken to render the ureters stone free, and in 1 child (3.1%) it was not possible to remove

the stone. Stones were fragmented with pneumatic lithotripsy in 2 cases and with Holmium laser in 9 cases; and in the remaining 22 cases stones were removed mechanically without fragmentation. Intraoperative complications occurred in 3 (9.3%) children and included extravasation (1 patient) and stone migration (2 patients) and early postoperative complications included haematuria in 1 patient and renal colic in another one. Of the patients, 28 were followed 3 to 48 months. No incidence of stricture at the site of stone impaction was detected in any patients.

CONCLUSIONS

In the hands of an experienced surgeon ureteroscopy can be safe and efficient treatment for ureteral stones in children. Holmium laser transureteral lithotripsy is a safe and effective procedure in management of pediatric ureteral urolithiasis regardless of stone location. Ureteroscopy could be considered as the procedure of choice for management of lower ureteral calculi in children.

#-141 (SO)

Ureteroscopy in children: is there a need for ureteral dilation and post-operative stenting?

C. D. ANTHONY HERNDON and DAVID B. JOSEPH

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PURPOSE

Ureteroscopic stone manipulation is the standard of care for distal stones in the adult population. Recently, with refinements in instrumentation, these standards have been applied to the pediatric population. Herein, we investigate the role of ureteral dilation and the need for post-operative stenting.

MATERIAL AND METHODS

Twenty-five children (19 male, 6 female) with a mean age of 11.4 (2.5-17.5) yrs underwent 30 ureterscopic procedures (18 right, 12 left) to address distal ureteral stones in 23, surveillance of the upper

tract in 6 and to retrieve a retained stent in 1. Ureteral dilation was not required in these patients. All but two patients had a diagnostic ureterogram performed at completion of the procedure. Four patients had pre-operative placement of a JJ stent. Post-operative stents were placed in 4 patients. Of these 4, two had stents placed pre-op for infection with autonomic dysreflexia or stone impaction. The remaining 2 were placed because of excessive edema.

RESULTS

Mean follow-up was 18.4 (0.3-42) months. To address stone disease, 11/23 (48%) procedures required laser litholipaxy and

12/23 (52%) procedures were managed with stone basket extraction. The remaining therapeutic ureteroscopy was performed for a retained JJ stent. Diagnostic ureteroscopy was unremarkable in all 6 cases. Extravasation was demonstrated in one patient and he was managed expectantly without stenting. None of the patients managed without a post-operative stent required subsequent intervention.

CONCLUSIONS

Pediatric ureteroscopy including laser lithotripsy is a safe and effective modality that can be performed without ureteral dilation or post-operative stenting.

#-142 (V)

Minimally invasive surgery and the management of urinary tract stone in childrens

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PURPOSE

we present our experience with retroperitoneal, transperitoneal, transvesical lithotomy in pediatric patients in whom shock wave lithotripsy and endoscopic access failed

MATERIAL AND METHODS

In a 8 years retrospective study, 12 patients (12 months to 15 years old) underwent minimally invasive surgical treatment for urolithiasis: 1 case of nephrotomy for multiple lithiasis in

a calicel diverticulum (transperitoneal approach), 3 cases of pyelolithotomy (retroperitoneal approach), 3 cases of ureterostomy for low ureteral stone (transperitoneal approach), 5 cases of vesicotomy (intravesical port placement under cystoscopic control). In each case

stones were removed with rigid grasper or basket collector under direct laparoscopic vision. The urinary tract was closed in watertight fashion and no catheter was left in place except in two cases where a congenital obstruction (1 case of pyeloureteral obstruction and 1 case of ureterovesical obstruction) was treated in the same time using the same ports.

RESULTS

All cases were completed laparoscopically. Operative time is

variable: short (30 min) in case of bladder lithiasis, medium (1.5 hour) in case of pyelo or ureteral lithiasis, long (3 to 4 hours) in case of urinary tract reconstruction (1 pyeloplasty and 1 ureteral reimplantation). A range of 1 to 12 stones were removed. No perioperative complications were noted. Mean hospital stay was 3.4 days. Stone analysis revealed 2 patients with cystine stones. There was 1 patient (cystinuria) with stone recurrence at a mean following of 12 months, and one patient operated by ureterotomy needed post operative ESWL

for remaining caliceal stones. The overall long term stone free rate was 92 %

CONCLUSIONS

So it should be considered as the first choice therapy in some selected cases and as salvage or second choice therapy for stone removal after failure of other minimally invasive treatment. This presentation is illustrated by a video

Friday, 17 June 2005: 15:30–15:55

S20: Endourology / laparoscopy 2

Chair: H. Olson, S. Docimo

#-143 (PWP)

Laparoscopic dye assisted lymphatic sparing varicocelectomy in adolescent boys

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PURPOSE

Hydrocele formation, the main complication of varicocelectomy is quite common and can cause psychological problems and influence adversely developing teenagers. Identifying the lymphatic vessels that drain the testis and tunica vaginalis with a dye and their preservation should decrease the incidence of postoperative hydroceles. The aim of this study was to evaluate the effectiveness and complication rate of use of Patent Blue to identify lymphatic vessels during laparoscopic varicocelectomy to avoid postoperative hydrocele.

MATERIAL AND METHODS

Forty boys affected by varicocele grade III underwent left-sided laparoscopic varicocelectomy. Average age of the

patients was 14,3 years (range 12-16 years). Half of the patients were randomly assigned to lymphatic non-sparing surgery (LNS) group, and 20 patients to lymphatic sparing (LS) group. Before surgery in the LS group, 2 mL of Patent Blue was injected subcutaneously under the tunica dartos on the left side. The blue-stained lymph vessels were readily visualized and preserved during the laparoscopic varicocelectomy.

RESULTS

All varicocelectomies were performed by laparoscopy and no open conversions were necessary. Of 20 patients from LS group lymphatic vessels were visualized in 18 (90%). In the remaining two (10%) the lymphatics could not be identified clearly. No adverse reactions or postoperative scrotal haematoma were found in any of the patients. All patients were discharged

the day of surgery. At a mean follow-up of 7 months (range, 3 to 14 months) no recurrent varicocele or testicular volume reduction were detected. Postoperative hydrocele was observed in three patients from NLS group and one case required a surgical repair. No patient from LS group yet developed a reactive hydrocele.

CONCLUSIONS

Staining gonadal lymph vessels with Patent Blue dye is an effective and simple method of visualization and preservation of the lymphatic drainage from the testis and tunica vaginalis. Although the method seems to be useful to avoid hydrocele formation after laparoscopic Palomo procedure in adolescents, a larger series and longer follow up are necessary to its validation

#-144 (PWP)

Pneumovesicoscopic ureteric reimplantation in children with vesicoureteral reflux and paraureteral (Hutch) diverticulum

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PURPOSE

Pneumovesicoscopic ureteric reimplantation (Cohen's type) proved to be a safe and beneficial approach to children with significant vesicoureteral reflux (VUR). The present study investigates the feasibility of this method to correct more complex anatomical cases

of VUR like paraureteral (Hutch) diverticulum and megaureter.

MATERIAL AND METHODS

Six patients (age 11 months to 8.5 years) had recurrent UTI due to VUR (grade 3-5) associated with Hutch diverticulum

(unilateral VUR in 4, bilateral VUR in 2, 1 additional megaureter). Transurethral cystoscopic guidance served for placement of the camera port (5 mm). The bladder was evacuated to install the pneumovesicum (CO₂ pressure of 10-12 mmHg). After insertion of two working ports (5mm), the diverticulum could be mobilized and resected. The ureter was

followed for 2.5 to 3cm into the extravascular space (the megaureter was then tapered inside the bladder (interrupted 5-0 vicryl). A submucosal tunnel was created (Cohen's type) and the ureter was drawn through the tunnel and the ureterocystoneostomy was completed (interrupted 5-0 Biosyn). For bilateral VUR, one child received subureteral Deflux injection simultaneously, the other bilateral reimplantation.

RESULTS

All procedures were completed successfully. Mean operating time was 173 min. (range 140-200 min.). Patients were discharged 1.7 days postoperatively without a stent (range 1-3 days). Follow-up after 3 months showed no evidence of significant VUR, no diverticulum recurrence or ureteral obstruction.

CONCLUSIONS

Children with Hutch diverticulum and associated VUR can be corrected effectively by pneumovesicoscopic ureteral reimplantation. The long-term outcome will need further evaluation.

#-145 (SO)

Retroperitoneal laparoscopic nephrectomy in children: at last the gold standard?

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PURPOSE

We analyzed our experience with retroperitoneal laparoscopic nephrectomy giving special attention to the learning curve, morbidity, and feasibility in a teaching institution

syndrome (48%) non functioning kidney secondary to obstruction, reflux, or ectopic ureter (30%), and dysplastic multicystic kidney (19%). Bilateral nephrectomy was done in 13 children

uneventful. Hospital stay was less than 48 hours in healthy children and it was 5 days in children with terminal renal disease. In the beginning, the procedure was done by one surgeon, then it was expanded to other surgeons of the team and was safely taught to residents and fellows

MATERIAL AND METHODS

Between 1996 and 2004, we performed 97 laparoscopic nephrectomies in 84 children. Only 4 were performed through transperitoneal approach while others were through retroperitoneal approach. Mean age was 5 yr (20 days-15 yr). Main indications were pretransplant nephrectomy for arterial hypertension, nephrotic syndrome or uremic hemolytic

RESULTS

The lateral retroperitoneal approach was feasible in all cases even for those who had previous renal surgery. Conversion was not needed in any patient. No significant blood loss was observed. Mean operative time was 97 minutes (44-180). Learning curve was relatively short, operating time was rapidly reduced to < 2 hours, and was variable depending on the underlying pathology and the size of the kidney. Postoperative course was

CONCLUSIONS

The procedure can be done safely, learning curve is reasonable, teaching is feasible, operating time becomes with experience closer to open surgery without morbidity, and cosmetic results are excellent. At last this procedure may be considered as the gold standard for nephrectomy in children

#-146 (PWP)

Laparoscopic transposition of lower pole vessels- the 'vascular hitch': an alternative for pelviureteric junction obstruction in children

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PURPOSE

Dismembered pyeloplasty has been the traditional technique in the management

of ureterovascular pelviureteric junction obstruction (PUJO) in children. Endopyelotomy and concomitant laparoscopic transposition of lower pole

vessels for PUJO has been described in adults. We describe our experience and technique of laparoscopic transposition of lower pole vessels in children with PUJO.

MATERIAL AND METHODS

The technique of laparoscopic transposition of lower pole vessels involved transperitoneal mobilisation of the lower pole vessels of the renal pelvis thereby freeing the PUJ and transposing them superiorly where they were anchored by approximating the pelvis around the vessels by 2-3 absorbable sutures through the adventia of the pelvis, well clear of the PUJ. The main outcome measures were relief of symptoms, improvement in U/S

appearances and/or drainage parameters on a postoperative MAG3 renogram performed within 4-6 weeks following surgery.

RESULTS

The mean operating time was 90 minutes. All patients were discharged within 36 hours following surgery. 9 patients remain symptom free at a mean of 5.2 m(4-9) and showed improved appearances on U/S and good drainage on the postoperative MAG3

renogram. One patient had recurrent symptoms needing a JJ stent insertion

CONCLUSIONS

Our early experience of laparoscopic transposition of lower pole vessels suggests it to be a useful minimally invasive alternative to standard open or laparoscopic pyeloplasty in older children with symptoms of intermittent PUJO and a high index of suspicion of lower pole vessels as the underlying aetiology.

#-147 (V)

Laparoscopic transposition of lower pole vessels- the "vascular hitch": an alternative for pelviureteric junction obstruction in children

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PURPOSE

Dismembered pyeloplasty has been the traditional technique in the management of ureterovascular pelviureteric junction obstruction (PUJO) in children. Endopyelotomy and concomitant laparoscopic transposition of lower pole vessels for PUJO has been described in adults. We describe our experience and technique of laparoscopic transposition of lower pole vessels in children with PUJO.

MATERIAL AND METHODS

Ten patients with a mean age of 15.4 years (14-16) underwent laparoscopic transposition of lower pole vessels. Surgery was indicated on the basis of

recurrent symptoms of intermittent PUJO and ultrasound and MAG3 confirmation of obstruction with or without reduced function. The technique of laparoscopic transposition of lower pole vessels involved transperitoneal mobilisation of the lower pole vessels of the renal pelvis thereby freeing the PUJ and transposing them superiorly where they were anchored by approximating the pelvis around the vessels by 2-3 absorbable sutures through the adventia of the pelvis, well clear of the PUJ. The main outcome measures were relief of symptoms, and improvement in the ultrasound appearances and/or drainage parameters on a postoperative MAG3 renogram performed within 4-6 weeks following surgery.

RESULTS

The mean operating time was 90 minutes. All patients were discharged within 36 hours following surgery. 9 patients remain symptom free at a mean of 5.2 m(4-9). All patients showed improved appearances on u/s or good drainage on the postoperative MAG3 renogram. One had recurrent symptoms needing JJ stent insertion

CONCLUSIONS

Our early experience of laparoscopic transposition of lower pole vessels suggests it to be a useful minimally invasive alternative to standard open or laparoscopic pyeloplasty in older children with symptoms of intermittent PUJO and a high index of suspicion of lower pole vessels as the underlying aetiology.

#-148 (V)

Horseshoe kidney and endoscopic surgery /retro or transperitoneal approach?

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fondation Lenva, pediatric surgery, Nice, FRANCE

PURPOSE

Horseshoe kidneys pose unique challenge due to variable vascular anatomy and the

presence of isthmus passing medially and inferiorly; as in open surgery, the approach for endoscopic surgery could be chosen according to the position of the

target organ. How to approach a horseshoe kidney for performing pyeloplasty or nephrectomy is debatable: trans or retroperitoneal

MATERIAL AND METHODS

4 childrens (6 months to 12 years old) underwent laparoscopic procedure: the first case (nephrectomy) by using a retroperitoneoscopic approach, the three following cases(1 nephrectomy + 2 pyeloplasties) using a transperitoneal approach with the scope located through the umbilicus (2 cases) or in the iliac fossa (1 case)

RESULTS

All cases were completed laparoscopically. No difference was found comparing operating time, postoperative recovery, analgesia, duration of hospital stay; however the choice of intraperitoneal access allowed an easier procedure because of a better view and a larger space for instruments movements

CONCLUSION

Although the both access, trans or retroperitoneal, are feasible, the transperitoneal one seems better adapted for minimally invasive approach of horseshoe kidney. Technical details are illustrated by a video

Saturday, 18 June 2005: 08:30–09:25

S21: Urinary tract infection

Chair: G. Bogaert, L. Shortliffe

#-149 (P)

Is aerobic preputial flora age dependent?

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PURPOSE

Urinary tract infections (UTI) are one of the most commonly encountered infections in childhood. It has been demonstrated that the preputial sac can act as a reservoir of an organism and is thereby responsible for causing ascending urinary tract infections. This study was performed to determine preputial flora in different age groups.

MATERIAL AND METHODS

Prepuce and urine samples were taken simultaneously from 92 uncircumcised and healthy male children aged between 0-12 years. The data were analysed by age with

47 being less than 6 years of age (Group A) and 45 over 6 years (Group B).

RESULTS

Seventy three percent of the older patients had positive preputial cultures vs. 91.5 % of those less than 6 years of age. In addition, enteric bacteria were the most common isolated pathogens from the prepuce in children less than 6 years of age whereas gram-positive bacteria were most common isolated bacteria in those over 6 years (Table 1). The urine was sterile in all cases.

CONCLUSIONS

Our study confirms that the preputial flora changes with age, showing a predominance of enteric bacteria in the first 6 years of life. In older children, the bacterial content of the preputium resembled normal skin flora with predominance of Gram- positive cocci. This change may be related to the development of immune status, histological and anatomical changes, smegma contents to the prepuce and the improvement in personal hygiene. An improved understanding of this process might alter medical recommendations regarding the use and age of circumcision.

Table 1 Distribution of microorganisms isolated from PS cultures

	0-6 years (Group A)	7-12 years (Group B)
Isolated microorganisms		
Escherichia coli	12	1
Enterococcus faecalis	12	9
Staphylococcus aureus	4	11
Proteus mirabilis	5	5
Klebsiella pneumoniae	4	1
Enterobacter cloaca	1	-
GABHS	-	5
Candida albicans	2	-
Pseudomonas aeruginosa	1	1
Citrobacter freundii	1	-
CNS	1	-
Total	43	33

GABHS: Group A beta haemolytic streptococci CNS: Coagulase negative staphylococci

#-150 (SO)

Phimosis treatment with topical steroids in 234 children: will the circumcision be coming to the end?

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PURPOSE

To study the efficacy and factors that may influence the therapeutic success of topical treatment of phimosis in children 3 to 10 years old with indication of circumcision treated with the association of betamethasone 0,2% and Hialuronidase pomatum.

MATERIAL AND METHODS

We evaluated 234 patients treated in a prospective, randomized, blind study. 117 patients were treated for 4 and 117 for 8 weeks, with one nocturnal application of the medication. One investigator evaluated and photographed

each monthly, and a second investigator recorded the information. Of the 234 patients, 55,5% had a punctate prepuce meatus, 44,5% had a prepuce meatus that restrain the exposure to the urethral meatus, 43,5% had a previous balanitis diagnostic, 26,9% had previous UTI and 91,45% had at the entrance examination panting fibrosis at the prepuce meatus.

RESULTS

At the end of treatment we observed 63,15% of total success, easily and complete retractile prepuce, for the 8 weeks course and 42,5% for the 4 weeks. We followed the patients for a mean 4,5 months and we observed 11,5% and 34,5%

of worsening of the gained result respectively 8 and 4 weeks of treatment. Balanitis, UTI, panting fibrosis at the prepuce meatus and age at treatment did not represent a factor for failure of topical treatment.

CONCLUSIONS

Topical steroid treatment (betamethasone 0,2% and Hialuronidase) was efficient in 63,15% of patients after 8 weeks course, keeping the favorable in 88,4%. For patients with punctate prepuce meatus the good results were much poor (21%). We consider therefore worthwhile the topical treatment before the circumcision.

#-151 (SO)

The long term results of topical application of a potent corticoid steroid cream for unretractable foreskin

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PURPOSE

The aim of this study was to evaluate the long-term efficacy of topical applications of a potent corticoid cream in the treatment of unretractable foreskin in boys from 1 month to 17 years old.

MATERIAL AND METHODS

Between January 2000 and June 2004, 567 boys with a mean age of 4.7 years (range 1 month – 17 years) presented to our clinic with the diagnosis of unretractable foreskin and were proposed to use topical applications of a potent corticoid cream

together with retraction of the foreskin twice daily for 6 weeks. The results after 6 weeks of treatment and the recent situation were compared and evaluated.

RESULTS

465/567 boys were available for the study. After 6 weeks of treatment, 400/465 boys (86 %) had an easily retractable prepuce without a phimotic ring. 65 boys had no or partial response, of whom 4 were treated by circumcision. After a median follow-up of 22 months (range 3 – 55 months), treatment with a corticoid cream was successful in 386/465 boys (83 %). In 79/

465 boys the foreskin was unretractable, of whom 35 preferred a surgical treatment. 12/465 boys presented with lichen sclerosus and still the application of a corticoid cream was efficient in 8/12 (67 %). No local or systemic adverse effects were noted.

CONCLUSIONS

This study has shown that local application of a potent corticoid cream is a safe, simple and effective treatment with very convincing long-term results for all types of unretractable foreskin in boys, aged 1 month to 17 years.

#-152 (LO)

Rapid species-specific detection of uropathogens using an electrochemical sensor array**BERNARD CHURCHILL, JOSEPH LIAO and DAVID HAAKE****University of California, Los Angeles, Urology, Los Angeles, USA - * University of California, Los Angeles, Medicine, Los Angeles, USA***PURPOSE**

To determine the feasibility for rapid molecular detection of uropathogens in urine samples using species-specific DNA probes with a novel electrochemical sensor array platform.

MATERIAL AND METHODS

A novel electrochemical sensor array was evaluated with DNA probes specific for clinically relevant uropathogen species. A rapid detection assay based on single-step bacterial lysis and electrochemical measurement of DNA hybridization was developed without the need for nucleic

acid purification or amplification. The specificity and sensitivity of direct uropathogen detection in urine were examined.

RESULTS

Species-specific detection of uropathogens was achieved in approximately 45 minutes using the electrochemical sensor array. DNA probes specific for *E. coli*, *P. mirabilis*, *P. aeruginosa*, *Enterococcus* spp., the *Klebsiella-Enterobacter* group, and the *Enterobacteriaceae* group were developed. The array also included a universal bacterial detection probe.

Direct detection of uropathogens was demonstrated in both inoculated urine and clinical urine samples from symptomatic patients. The sensor was able to detect as few as 103 bacteria, demonstrating zeptomole sensitivity of this approach.

CONCLUSIONS

We provide the first demonstration of species-specific detection of bacterial pathogens in clinical specimens using an electrochemical sensor. The sensor array can be an integral component of a point-of-care system for molecular detection of pathogens in body fluids.

#-153 (P)

Suppression of renal scarring by gentamicin-loaded polybutylcyanoacrylate nanoparticles in ascending pyelonephritis in rats**RUSLAN BATRUTDINOV***Institute of Child Health, Children Hospital, Paediatric Urology, Moscow, RUSSIAN FEDERATION***PURPOSE**

To prevent renal scarring, which occurs at the end stage of chronic pyelonephritis due to vesicoureteral reflux of infected urine, immediate antimicrobial treatment is reported to be essential. When treatment is delayed, the antimicrobial agent is believed to be effective only in eliminating bacteria, not in preventing scar formation. Using the ascending pyelonephritis model in rats, we investigated the effect of delayed treatment with gentamicin (GM) alone and gentamicin-loaded polybutylcyanoacrylate nanoparticles (GM-NP) in preventing renal scarring following infection.

MATERIAL AND METHODS

An inoculum of 1×10^9 colony forming units (cfu)/0.1 ml. of the HM32 strain of *Escherichia coli*, which was isolated from a patient with a urinary tract infection, was injected directly via urethra into bladder of the rat, and the urethra was clamped for 3 hours in each rat. Treatment by GM alone and GM-NP (10 mg/kg., once a day for 5 days) was initiated 72 hours after bacterial inoculation. The kidney of each rat were examined 6 weeks later.

RESULTS

Delayed treatment by GM had no effect on scarring (6 of 12 kidneys showed scarring)

when compared with the untreated controls (10 of 12 kidneys showed scarring). However, the delayed treatment with GM-NP significantly inhibited renal scarring (only 2 of 12 kidneys showed scarring) when compared with the untreated controls (10 of 12 kidneys showed scarring).

CONCLUSIONS

These data suggest that gentamicin-loaded polybutylcyanoacrylate nanoparticles is effective in preventing renal scarring which occurs due to vesicoureteral reflux when the initiation of antimicrobial treatment is delayed.

#-154 (P)

Cranberry juice inhibits adherence of uropathogenic escherichia coli to primary cultured uroepithelium**RICHARD GRADY, ANN STAPLETON*, AMY HOWELL† and CHERYL WOBBE‡***Children's Hospital, Urology, Seattle, USA - * University of Washington, Infectious Disease, Seattle, USA - † Rutgers University, Chatsworth, USA - ‡ University of Washington, Microbiology, Seattle, USA***PURPOSE**

Clinically, cranberry supplements have decreased the incidence of recurrent UTI in the adult population in select randomized controlled trials. Several studies suggest that the mechanism of action may involve inhibition of bacterial adherence. We sought to determine whether cranberry metabolites inhibit bacterial adherence in a biologically relevant in vitro assay.

MATERIAL AND METHODS

The effect of 1.) cranberry powder, 2.) proanthocyanidin extract (a cranberry metabolite), and 3.) urine after ingestion of cranberry juice cocktail on adherence of a representative uropathogenic E. coli isolate (IA2) to primary bladder transitional urothelium was tested.

RESULTS

Preincubation of cranberry powder (9 mg PAC/g) with the E.coli reduced adherence to urothelium from a mean of 7.18 bacteria/cell to 3.05 bacterial/cell

($p < .001$). Pre-incubation of Bacteria with cranberry urine metabolites resulted in similar dose-dependent inhibition.

CONCLUSIONS

The results from this study as well as others shows that cranberries inhibit adherence of bacteria to urothelium and suggest that this is a plausible mechanism of action of cranberry metabolites to prevent urinary tract infection

#-155 (P)

Association between Interleukin-8 gene alleles and susceptibility to acute pyelonephritis**LUISA MURER, LINA ARTIFONI*, WAIFRO RIGAMONTI†, SONIA CENTI‡, SUSANNA NEGRISOLO¶, MANUELA DELLA VELLA‡, GIOVANNI MONTINI§, FRANCA ANGLANI/ and GRAZIELLA ZACCHELLO***Pediatric Nephrology Dialysis and Transplantation, Dep. Pediatrics-University of Padova, Padova, ITALY -*** Laboratory of pediatric Nephrology, Department of Pediatrics-University of Padova, Padova, ITALY - † Institute of Urology, University of Padova, Padova, ITALY - ‡ Laboratory of Pediatric Nephrology, Dep. Pediatrics-University of Padova, Padova, ITALY -**¶ Laboratory of Pediatric Nephrology, Dep. Pediatrics-University of Padova, Padova, ITALY -**§ Pediatric Nephrology Dialysis and transplantation, Dep. Pediatrics-University of Padova, Padova, ITALY -**/ Laboratory of renal Molecular Biology, University of Padova, Padova, ITALY - Pediatric Nephrology Dialysis and Transplantation, De. Pediatrics-University of Padova, Padova, ITALY***PURPOSE**

In response to chemotactic signals from infected urinary tract, neutrophils migrate according to the gradient strictly regulated through the sequential elaboration of chemokines and their receptor. Interleukin 8 (IL-8) was identified as the main chemokine supporting transendothelial neutrophil migration by binding to its high affinity receptors (CXCR1 and CXCR2). Murine animal models have shown that there is a close correlation between increases in gene expression of IL-8 and CXCR1, and

inflammation associated with the risk of renal damage. Furthermore have been suggested that functional polymorphisms of genes involved in inflammatory response are correlated to alterations of their expression.

MATERIAL AND METHODS

We have performed a case-control study designed to evaluate the association of IL-8 functional polymorphisms -251A>T and +2767A>G and its receptor CXCR1+2607G>C with a first episode of

upper urinary tract infection, with or without VUR, in 265 children recruited on the basis of homogeneous clinical and diagnostic findings already described in the literature. They were subdivided as follows: 173 children had a positive static renal scintigraphy in acute conditions (DMSA+) that was consistent with the diagnosis of acute pyelonephritis and 92 children had a negative static renal scintigraphy in acute conditions (DMSA-). Genetic analysis for the same polymorphisms was extended also to a control population consisting of 106 umbilical cord DNA samples.

RESULTS

The statistical analysis of genotype data showed that: a) all the populations tested were in Hardy-Weinberg equilibrium b) there were significant differences both between the DMSA+ and DMSA- group ($p=0.042$) and the DMSA+ group vs control

population ($p=0.026$) in terms of IL-8 -251A>T polymorphism frequency c) there was also a significant difference in the distribution of the IL-8 +2767A>G polymorphism between DMSA+ and DMSA- subjects ($p=0.02$). d) the outcome was significant also in the sample of children with pyelonephritis without VUR.

CONCLUSIONS

Our data show that the gene for the proinflammatory chemokine IL-8 is involved in the susceptibility to acute pyelonephritis during upper urinary tract infection.

Saturday, June 18 2005: 11:15–12:00

S22: Vesicoureteral reflux 2

Chair: G. Läckgren, T. Hensle

#-156 (SO)

**Intra- or extravesical ureteral reimplantation for unilateral vesicoureteral reflux in children?
a prospective randomized study**

**CHRISTIAN SCHWENTNER, JOSEF OSWALD, ANDREAS LUNACEK, BARBARA SCHLENCK, GEORG BARTSCH*,
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Innsbruck, AUSTRIA - † Medical University Innsbruck, Biostatistics, Innsbruck, AUSTRIA*

PURPOSE

Both extravesical and intravesical ureteral reimplantation are used in clinical practice. Each technique guarantees success rates of more than 95%. We performed a prospective, randomized trial to compare the assets and drawbacks of these two techniques in terms of operative co-morbidity.

MATERIAL AND METHODS

44 children (29 girls, 15 boys, mean age 67.23 months) with unilateral VUR (°II=17; °III=20; °IV=7) were randomly assigned to two groups: 22 patients underwent extravesical reimplantation (Lich-Gregoir) and 22 were randomized to the intravesical Politano-Leadbetter technique. No ureteral stents were used in either group. Both groups were compared

with regard to operative time, duration of gross hematuria, dilation of the upper tract, discomfort and pain, consumption of analgesics as well as voiding dysfunction and reflux persistency. The two tailed Student's T-test was used for statistical evaluation, significance was assumed if $p < 0.05$.

RESULTS

No child in either group had recurrent VUR on the treated side. Contralateral °II VUR was noted in 5 patients without significant difference between the two groups ($p=0.18$) and was transient in all cases. The mean operative time was significantly shorter using the extravesical technique ($p < 0.0001$). Gross hematuria occurred only after intravesical reimplantation and persisted a mean of 4.19 days ($p < 0.0001$). The objective pain score was worse after

intravesical surgery ($p=0.001$). Consequently, analgetic requirements were higher after the Politano reimplantation ($p=0.01$). No postoperative urinary retention was noted.

CONCLUSIONS

Both unilateral extravesical and intravesical reimplantation provide good tools to correct reflux. The mean operative time was significantly shorter using the Lich-Gregoir technique with avoidance of gross hematuria. Postoperative pain was significantly less using extravesical ureteral reimplantation. Consequently, it represents a minimally invasive surgical technique to correct reflux and should therefore be the method of choice in cases of unilateral VUR.

#-157 (SO)

Bilateral extravesical ureteral reimplantation in toilet-trained children: is one-day hospitalization without urinary retention possible?

JEFFREY PALMER

Rainbow Babies and Children's Hospital, Pediatric Urology, Cleveland, USA

PURPOSE

Bilateral extravesical ureteral reimplantation has been associated with urinary retention. A critical pathway and modification of surgical technique were developed to determine if the bilateral extravesical procedure could be performed in toilet-trained children with

patients discharged after a one-day hospitalization and without urinary retention.

MATERIAL AND METHODS

50 consecutive toilet-trained children were evaluated after undergoing bilateral

extravesical ureteral reimplantation using a modified technique, which involved limited ureteral dissection distal to the obliterated umbilical artery. A caudal analgesic and intraoperative and postoperative ketorolac were used unless contraindicated. Parents received extensive preoperative and postoperative education. Patients followed a timed

voiding schedule postoperatively. Five strict criteria were required in order to be discharged from the hospital: 1) urinated multiple times after Foley catheter removal; 2) tolerated a regular diet; 3) pain-free using oral analgesics; 4) ambulated without difficulty, and, 5) parents comfortable taking the child home.

RESULTS

The patients' ages ranged from 1.9 to 12.8 years of age (mean of 4.9 years) with 37 girls and 13 boys. All patients were discharged on the first postoperative day and able to void postoperatively without any instances of urinary retention. None of the children had acute urinary tract infections or required rehospitalization. All patients had radiographic resolution of the vesicoureteral reflux on postoperative VCUG.

CONCLUSIONS

Therefore, the limited dissection technique of bilateral ureteral reimplantation along with the use of a critical pathway in toilet-trained children, which included extensive preoperative and postoperative parental education and timed voiding, allowed for a one-day hospitalization without an episode of urinary retention.

#-158 (PWP)

Adventitial-sparing ureteral tailoring; an alternative to existing techniques

ANTHONY BALCOM, CHARLES DURKEE and HRAIR MESROBIAN
Medical College of Wisconsin, Pediatric Urology, Milwaukee, USA

PURPOSE

Existing ureteral tapering techniques for megureters include excision and infolding. While these techniques tend to work well, they can be technically challenging and time-consuming, requiring an extensive amount of repetitive suturing. The existing techniques are also not without complications, such as leakage and stenosis.

MATERIAL AND METHODS

We present our experience in ten patients undergoing ureteral tailoring for obstructed megaureter, or dilated ureter from vesicoureteral reflux. This novel technique of ureteral tapering consists of 1) excision of the epithelium only of the dilated ureter, and 2) preservation of the adventitial layer of the ureter. The adventitial layer is then "wrapped around" the reconstructed tubularized epithelium, involving interrupted sutures, thereby shortening the procedure. The tailored ureter is then anastomosed to the bladder in a standard fashion.

RESULTS

We have not had post-operative complications, such as urine leakage, presumably because of the "Double" layer ureteral closure, nor ureteral stenosis.

CONCLUSIONS

This novel method of ureteral tailoring allows rapid and technically straightforward ureteral tailoring of megaureter at ureteroneocystostomy.

#-159 (PWP)

A comparison of single-dose caudal clonidine versus morphine in pediatric patients undergoing ureteral reimplantation

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PURPOSE

To compare the efficacy and safety of single dose clonidine caudal block compared to standard morphine caudal for post-operative analgesia in patients undergoing ureteral reimplantation.

MATERIAL AND METHODS

We retrospectively reviewed 60 patients who underwent ureteral reimplantation over a 6-month period. They were divided into three groups based on the type of caudal administered: clonidine +

ropivacaine (CR); morphine + ropivacaine (MR); and morphine + normal saline (MN). Exclusion criteria included age > 6 years, mental retardation or developmental delay. Measured variables included time to first morphine dose, total morphine delivered during the initial 24

hours, incidence of post-operative pruritis, nausea/vomiting and serial pain scores over the first 24 hours.

RESULTS

Clonidine and ropivacaine provided an equivalent level of analgesia compared to both morphine groups. PACU administration of morphine, time to first morphine dose and total morphine dose

were equivalent across all three groups. Post-operative pruritis and nausea/vomiting were significantly decreased in the CR group. No respiratory depression, hypotension or bradycardia occurred in any patient.

Group (N)	CR (13)	MN (18)	MR (21)	p-value
PACU MSO4	Yes=4 (31%)	Yes=10 (53%)	Yes=9 (43%)	0.23
Initial MSO4	4.8 ± 6.0 hours	5.6 ± 7.8 hours	3.9 ± 5.8 hours	0.72
Total MSO4	8.6 ± 5.3 mcg/kg/hr	11.1 ± 9.3 mcg/kg/hr	8.6 ± 6.0 mcg/kg/hr	0.47
Pruritis	Yes=1 (6.7%)	Yes=12 (57%)	Yes=15 (62%)	0.0003
PO N/V	Yes=1 (6.7%)	Yes=8 (38%)	Yes=9 (38%)	0.02

CONCLUSIONS

Single dose clonidine and morphine caudal provide comparable post-operative analgesia. Post-operative pruritis, nausea

and vomiting are significantly less with clonidine caudal. The safety profile between the two medications appears to be similar.

#-160 (P)

A review of failures of endoscopic treatment of vesicoureteral reflux with dextranomer macrospheres

ANTHONY CALDAMONE, JAMES HIGHAM-KESSLER, WARREN SNODGRASS*, MARTIN KOYLE†, TERRY HENSLE‡, RICHARD HURWITZ¶, MARC CENDRON§ and DAVID DIAMOND§

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PURPOSE

The purpose of this study was to examine the mechanisms responsible for technical failures of the endoscopic correction of VUR with dextranomer macrospheres based on direct observations of failed implantation sites.

MATERIAL AND METHODS

This study consisted of 81 patients, 3 months to 24 years (mean 4.5 years) who had received 120 ureteral injections on one or more occasions which failed to correct VUR. Each endoscopic procedure was either videotaped or photographed at time of the injection, and then re-examined on subsequent inspection of the failed injection site, either cystoscopically (72) or intraoperatively (48). The following parameters were evaluated: pre-/post-

injection grade of VUR, indications for treatment, presence or absence of voiding dysfunction, length of time followed prior to primary injection, volume and quality of injection, and the appearance of the mound relative to the initial injection. This appearance of the mound was categorized as to whether there was displacement of the mound, volume loss, extrusion, extravascular displacement, or indeterminate with normal appearing mound.

RESULTS

Of the 118 failed ureteral injections the etiology of the failure was believed to be do to mound displacement in 65, extravascular displacement in 6, volume loss or absence of mounds in 34, volume loss plus mound displacement in 3, extrusion of the material in 4, and an

indeterminate cause in 15. The direction of mound displacement was most commonly medial and/or caudal. The anatomical observations in the voiding dysfunction group did not differ with the findings of the non-voiding dysfunction group.

CONCLUSIONS

Findings on observation of failed implantations for the correction of reflux indicated that mound displacement resulted in the majority of failed cases, followed by complete absence of a mound and volume loss. In 15 cases the mound appearance was considered to be indeterminate as it appeared normal on inspection in spite of persistent reflux. A clinical history of voiding dysfunction does not appear to effect the observations in this population.

#-161 (PWP)

The endoscopic treatment of vesico-ureteral reflux in challenging cases: the reimplanted ureter and the incised ureterocele**SIMONA NAPPO, NICOLA CAPOZZA, GIUSEPPE COLLURA, ENNIO MATARAZZO and PAOLO CAIONE***Bambino Gesù Children's Hospital, Division of Pediatric Urology, Rome, ITALY***PURPOSE**

To assess the feasibility and results of the endoscopic treatment of vesico-ureteral reflux (VUR) in the previously reimplanted ureter and the incised ureterocele (UTC).

MATERIAL AND METHODS

From January 1990 to December 2002, 28 patients underwent endoscopic treatment for VUR grade II-IV persisting after open reimplantation (39 ureteral units (UU). The patients were operated for obstructed megaureter (15UU), high grade VUR (22UU) or VUR associated with UTC in duplex kidney (2UU). Open reimplantation was performed according

to the following techniques: Cohen (28UU), Glenn-Anderson (2UU), Leadbetter-Politano (4UU), Gil-Vernet (2UU), with tailoring of the dilated ureter in 30 ureters. The endoscopic treatment was performed 1 to 7 years after surgery (average: 2.5 years), with Bovine Collagen (19 pts) or Dextranomer Copolymer (Deflux R) (9 pts). Eight more patients were treated with Dextranomer Copolymer for VUR appeared after the endoscopic section of a ureterocele. The injected volume ranged from 0.5 to 2.8 ml. Some technical refinements were used to increase the outcome of the procedure.

RESULTS

No complications were observed. Success (VUR grade 0-I) was observed in 21/28 patients after failed reimplantation (75 %). No significant difference in success rate was found from a control group of patients treated by the same surgeons for primary VUR, matched for grade. VUR was cured in 4/8 patients treated after UTC incision (50%).

CONCLUSIONS

The endoscopic treatment may have a significant role after the failure of open surgery or section of UTC, with high success rate and a minimally invasive procedure.

#-162 (P)

Cystoscopic findings after failed endoscopic treatment of VUR in children with bladder dysfunction**GILIAN BARKER, ARNE STENBERG*, NILS WÄHLIN* and GÖRAN LÄCKGREN†**

*Section of Urology, Dept. of Ped. Surgery, Uppsala, SWEDEN - * Section of Urology, Dept. of Pediatric Surgery, Uppsala, SWEDEN - † Section of Urology, Dept. of Ped. Surgery, Uppsala, SWEDEN*

PURPOSE

It has been proposed that poor result of endoscopic treatment in children with VUR and concomitant bladder dysfunction is caused by an overactive bladder that may dislocate the injected material. We have compared the endoscopic results of the Deflux-injection after a first failed treatment of VUR in children with and without bladder dysfunction.

MATERIAL AND METHODS

We evaluated our first five-years experience (1993-1998) with Deflux-treatment in 308 children (200 girls and 108 boys) with grade III-V reflux (including double ureters). "Signs of bladder dysfunction" were found in 54 children

(48 girls and 6 boys). In a total of 100 children (17 of them with bladder dysfunction) the first treatment failed (persistent grade III-V). The operative charts and video-films were studied and the look and location of the injected bolus were recorded as 1) bolus visible under the orifice 2) dislocated bolus (medially, laterally or distally) or 3) no visible bolus.

RESULTS

In 83 patients with no signs of bladder dysfunction and with persistent reflux after the first treatment recordings for 77 patients (96 ureters) were found and the bolus was: 1) visible in 17 ureters (18%) 2) dislocated in 30 (28%) and 3) not visible in 49 ureters (51%). In the 17 children (all girls) with bladder dysfunction 23 ureters were retreated and the injected material

was: 1) visible in 6 (26%) 2) dislocated in 6 (26%) and 3) not visible in 11 ureters (48%). There was no difference between the two groups of retreated children and there seemed to be a correlation between low injected volume (0,2-0,5 cc) and no visible bolus and also between multiple punctures at the first treatment and no visible bolus at the retreatment.

CONCLUSIONS

We could not find any increased risk of mound dislocation in children with bladder dysfunction after Deflux-treatment. Bladder dysfunction did not seem to affect the technical success of Deflux treatment in children with high grade VUR. A small injected volume and multiple injection sites seem to predict a poor result.

#-163 (LO)

The Swedish reflux study - an interim report**SVERKER HANSSON, ULLA SILLÉN, EIRA STOKLAND, RUNE SIXT and GÖRAN LÄCKGREN****The Queen Silvia Children's Hospital, PUNC, Göteborg, SWEDEN - * Urology section, Pediatric Surgery, Upsala, SWEDEN***PURPOSE**

The role and management of vesicoureteral reflux (VUR) in children have been under debate during recent years. This prospective, randomised study was set up to compare the morphological and functional development of the kidneys, the rate of recurrent urinary tract infections (UTI), and reflux status in children managed with one of three treatment principles.

MATERIAL AND METHODS

Children with dilating VUR (grade 3-4) aged 1-2 years are eligible. Randomisation

is performed to endoscopic intervention with Deflux®, antibiotic prophylaxis or observation with short treatment courses of UTI.

RESULTS

128 children have this far been included in the study. 44 children have completed the 2-year follow-up period. So far, very few patients have shown deterioration of renal status according to DMSA scintigraphy with no difference between the 3 treatment arms. Recurrent febrile UTI was rarely seen in all the groups in boys, while in girls it was significantly more common in the observation group. In the small

material analysed this far, there was no obvious difference in the rate of disappearance of VUR between the groups.

CONCLUSIONS

This national study is important from two aspects. First, an observation group without prophylaxis is included in the randomisation. Secondly, injection treatment of VUR is objectively compared with the other treatment options concerning recurrent febrile UTI and kidney outcome. This far recurrent UTI seems to be more common in girls in the observation group.

Saturday, 18 June 2005: 12:00–12:35

S23: Hypospadias 2

Chair: G. Manzoni, B. Belman

#-164 (PWP)

An exact geometrical construction of the fossa navicularis: avoidance of meatal stenosis in Snodgrass hypospadias repair

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PURPOSE

The tubularized incised urethral plate hypospadias repair has become the technique of choice for distal and most proximal hypospadias. The repair is standard and easy for the glans with a generous groove but more difficult for the flat glans. We report a technique to recreate the fossa navicularis and a perfectly closed glans but at the same time avoid distal stenosis in Snodgrass hypospadias repair.

with a deep groove or megameatus were excluded). The repair begins with the incision of the urethral plate. Next the glans margins are identified and incisions are made medial to lateral, angulating moderately to severely outwardly, rather than parallelly. Once the corona is reached, the incisions are extended proximally in a standard fashion to reach the hypospadiac meatus. All the tissues medial to the incisions are incorporated into the tubularization to recreate a more anatomically closely resembling to a native urethra with a fossa navicularis.

had urethral calibration in the office. Of these pts, no pts developed urethral stenosis. VCUG shows the distal urethra indistinguishable from normal with a normal looking fossa navicularis. Cosmetically, all pts have an exact reapproximation of the glans and corona.

CONCLUSIONS

By recognizing the geometry of the glans accurately, this technique offers an exact reconstruction of the distal urethra by utilizing all available tissue of the ventral and distal glans which is essential in the very difficult flat glans case. Moreover, it actually can recreate a more normal anatomical fossa navicularis and therefore avoid distal stenosis.

MATERIAL AND METHODS

From Aug. 2002 to Aug. 2004, we identified 35 cases of distal and proximal hypospadias with a flat ventral glans (pts

RESULTS

Follow up is 4 mos to 23 mos. Ten pts up to date have undergone VCUG and 25 pts

#-166 (PWP)

Onlay urethroplasty after sectioning of the urethral plate: the "three-in-one" technique for complex primary hypospadias

ANTONIO MACEDO JÚNIOR, RICARDO FREITAS, GILMAR GARRONE, SÉRGIO LEITE OTTONI, ITAMAR GONÇALVES, MAURÍCIO HACHUL, RIBERTO LIGUORI*, VALDEMAR ORTIZ and MIGUEL SROUGI

*Federal University of São Paulo, Urology, São Paulo, BRAZIL - * Federal University of São Paulo, u, São Paulo, BRAZIL*

PURPOSE

Surgery for primary complex hypospadias, in which preservation of the urethral plate in not possible can be performed by a two-

stage procedure or with a tubularized preputial island flap. We published recently the "three-in-one" technique based on dorsal buccal mucosa graft to reconstruct the urethral plate, a flap of

prepuce for a onlay urethroplasty and a flap of cremasteric muscle to cover the neourethra. We reviewed our results with this technique for proximal primary hypospadias.

Abstracts 165 and 167 removed.

MATERIAL AND METHODS

Since March 2002, we started this one-stage strategy for every complex hypospadias that required section of the urethral plate to get the penis straight. A graft of buccal mucosa was obtained from the lower lip and used dorsally above the corpora to rebuild the urethral plate. We operated on 16 patients (10 scrotal, 5 penoscrotal and 1 perineal hypospadias). Age at surgery ranged from 7 to 324 months (mean 61 months). A 6 week course of topic 1% testosterone cream was used by 13 patients. A silicone urethral and suprapubic tube were left for 10 and 14 days respectively.

RESULTS

We found as complications 2 meatal stenosis (12.5%), 2 partial distal urethral dehiscences (12.5%) and one proximal fistula related to the meatal stenosis (6.25%). Two patients presented with orchidoepididymitis (12.5%), one requiring surgical abscess drainage. Three patients presented with moderated dilated penile urethra but only one was related to meatal stenosis. We reoperated 3 patients (2 meatoplasties, 1 fistula closure) (18.7%). Our present follow-up is 17.3 months (6- 30 months). In resume our overall surgical complication rate was of

31.25% plus 12.5% of clinical complications.

CONCLUSIONS

We believe that this method produces a safe urethral reconstruction, having the advantage of being an only one surgical stage. The complication rate is acceptable and compared to other series. We agree that the follow-up is still limited but considering that the principles are well established individually, further use of this technique should eventually confirm the excellent results so far.

#-168 (PWP)

Proximal hypospadias repair in 22 patients with meatal based paracoronal skin flap: the modified Koyanagi repair

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Hopital Necker-Enfants Malades, Pediatric surgery, Paris, FRANCE

PURPOSE

Proximal hypospadias, can be repaired by various techniques. Although a staged repair is an option a one stage repair is usually preferred as it lowers the number of surgical procedures. Correction of the chordee in these severe cases, often implies a division of the urethral plate and a long urethroplasty. Tubularized island flaps and even more, free grafts are associated with a high complication rate. A paraurethral-based and fully extended circumferential foreskin flap as described by Koyanagi (ref 1), allows a long urethroplasty with a hemicircular proximal anastomosis. We report our experience and results with the modified Koyanagi repair which focuses on preserving the lateral blood supply to the neourethral flaps (ref 2) .

MATERIAL AND METHODS

22 consecutive patients with penoscrotal hypospadias were operated upon. The age ranged from 6 to 56 months (median 17 months). The follow up ranged from 1 month to 4 years (mean 26 months). Two patients had prior surgical procedures which spared the foreskin, and twenty were primary cases which all had severe chordee due to a short urethral plate. Twelve boys were stimulated preoperatively by local or systemic androgens.

RESULTS

The repair was successful in one stage in Fifteen patients (69%). Urethrocutaneous

fistula developed in six (30.6%) and a urethral stricture in only one (5%) patient who had had a previous attempt of correction of chordee. four fistula were repaired successfully with one (2) or two (2) subsequent procedures and the urethral stricture was dilated once under general anaesthesia. Two patients are scheduled for fistula closure.

CONCLUSIONS

The modified Koyanagi technique allows a one stage repair of proximal hypospadias with a reasonable complication rate. The incidence of postoperative proximal stenosis is particularly low.

1. J Urol, 130: 1150, 1983
2. J Urol 164: 973, 2000

#-169 (PWP)

The tunica vaginalis dorsal graft urethroplasty: experimental study in rabbits

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PURPOSE

The purpose of this study was to create an experimental model of urethral defect, and then repair it by using a tunica vaginalis graft which is applied on the dorsal surface of the urethra over the corpora cavernosa. We study the histological and radiological characteristics of free tunica vaginalis graft urethroplasty.

MATERIAL AND METHODS

In twenty New Zealand rabbits a dorsal urethral defect was created by excising a portion of the dorsal urethral surface. The tunica vaginalis graft was placed dorsally over the corpora cavernosa and tied with four interrupted sutures. The mucosal margin of the urethral defect was sutured to the graft using 6-0 PDS sutures

in a continuous fashion. The experimental animals were divided into four equal groups and were killed at 14 days, 4 weeks, 8 weeks and 12 weeks after surgery, respectively. A retrograde urethrogram was taken at autopsy. The penis was sent to a histological analysis with hematoxylin-eosin, Masson's trichrome and Picrosirius red staining. A experienced pathologist (R.D.) examined the specimens and evaluated the severity of acute and chronic inflammation, foreign body reaction, and scar formation.

RESULTS

There were no intraoperative complications or difficulties associated with tunica vaginalis harvesting; all the rabbits voided spontaneously after surgery. When the rabbits were killed the urethra was easily calibrated using a 10 F

foley catheter in all. Retrograde urethrograms showed no fistulae or stricture. As the time after surgery increased, the signs of inflammation response disappeared, and the orientation of collagen fibrils and smooth muscle fascicles resembled that of a normal urethra. The mesothelial lining of the tunica vaginalis gradually became replaced by a more stratified epithelial lining similar to the urothelial lining of the native urethra.

CONCLUSIONS

In the present study we showed that a tunica vaginalis graft placed dorsally can be a successful urethral substitute in the animal model and may be considered for clinical use in difficult cases.

#-170 (V)

Dorsal tunica vaginalis graft to reconstruct the urethral plate for complex one-stage onlay urethroplasty

ANTONIO MACEDO JR., ADRIANO CALADO*, GILMAR GARRONE, MAURICIO HACHUL, RIBERTO LIGUORI, ITAMAR GONÇALVES, RICARDO FREITAS, VALDEMAR ORTIZ and MIGUEL SROUGI

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PURPOSE

Despite classical strategy to correct complex primary hypospadias either by a 2-steps surgery other a tubularized preputial island flap we published recently a technique in which the urethral plate can be reconstructed by a dorsal buccal mucosa graft allowing onlay urethroplasty after section of the urethral plate (The three-in-one technique). We evaluated experimentally the healing of a tunica vaginalis graft dorsal to the corpora to reconstruct the urethra in rabbits. Our results stimulated us to substitute the buccal mucosa by the tunica vaginalis in our concept of one-stage repair in every

circumstance. This modification could theoretically reduce morbidity and operative time. We treated a 8 months scrotal hypospadias patient according to this orientation.

MATERIAL AND METHODS

The surgery started by a dorsal subcoronal and a U shaped ventral skin incision thus degloving the penis and defining the urethral plate. In order to straighten the penis, the urethral plate was sectioned close to the subcoronal area and sutured proximally to the corpora. The dorsal defect of the urethral plate was then corrected by a tunica vaginalis graft

sutured above the corpora cavernosa. A transverse dorsal preputial island flap was defined and anastomosed onlay to the neoplasty by a running 6.0 PDS suture. We developed additionally a cremasteric flap to cover the neourethra and protect against fistulas. A urethral silicone tube and a suprapubic tube were left for 10 days.

RESULTS

The patient had a favorable healing outcome and presented a straight urinary stream. No early complications were seen.

CONCLUSIONS

This modification was based on previous experience with the "the three-in-one-technique" in which a buccal mucosa

graft is used to reconstruct the urethral plate. We believe that the tunica vaginalis graft could be used with same purpose representing a simplification of the procedure. We agree that further

experience and longer follow-up will be necessary to address definitive conclusions about the method.

#-171 (SO)

Factors affecting outcome of tubularized incised plate urethroplasty (TIPU): single-center experience with 500 cases

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PURPOSE

Evaluation of different factors affecting the outcome of tubularized incised plate urethroplasty (TIPU).

present in 98 (19.6%) patients. The neo-urethra was covered by spongiosal and/or dartos flap in 472 boys (94.4%). The repair was non stented in the remaining 49 boys (9.8%). Logistic regression was used for statistical analysis.

years of the study. Nevertheless, the last three factors were the only significant independent risk factors in multivariate analysis.

MATERIAL AND METHODS

Between January 1998 and December 2003, 500 children, with a mean age of 6 years (SD = 3.7, range of 1 - 18) underwent TIPU at our center. Patients included 439 (87.8%) boys with denovo hypospadias and 61 re-operative. The site of hypospadias was coronal in 110 (22%), distal penile in 261 (52.2%), mid-penile in 78 (15.6%), proximal penile in 21 (4.2%) and penoscrotal in 30 (6%). Chordee were

RESULTS

The mean follow up was 34 ± 18 months. Overall success rate was 81.4%. Re-operation was required in 93 patients (18.6%) due to fistula and/or stenosis. On univariate analysis, complications were significantly more common in stented repairs, proximal hypospadias, in those with no neourethral coverage (spongioplasty), and in repairs in the first

CONCLUSIONS

The TIPU is a reliable method for treating both distal and proximal hypospadias and is suitable for re-operative cases. Significantly better outcome is achieved with distal hypospadias, covering the neo-urethra by the mobilized corpus spongiosum (spongioplasty), and experience. Stenting of the repair, patient age, or previous failed repair has no statistical significant impact on outcome.

#-172 (SO)

Hypospadias repair with tubularised incised plate - is uroflowmetry necessary postoperatively?

GUNDELA HOLMDAHL, KATE ABRAHAMSSON*, MONIKA DOROSZKIEWICZ†, LENA KARSTRÖM‡ and ULLA SILLÉN*

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PURPOSE

Tubularised incised plate (TIP) gives good cosmesis and few urethral fistulas, but in many boys an "obstructive" flow" is seen postoperatively. The main aim of this study was to see if uroflowmetry is a good screening method for diagnosing postoperative strictures.

boys had proximal hypospadias. Control with uroflowmetry was done 2 months (72/131) and 1 year (61/131) postoperatively in potty-trained boys. 42 boys (5 boys with proximal hypospadias) had flowmetry done at both occasions. Boys with pronounced obstructed flow were calibrated in neourethra.

Median maximal flowrate was lower in boys with stricture, but not significantly. At 12 months 27% had plateau-curves, consisting mainly of those who had earlier been dilated. Flow rates had increased. All boys with proximal hypospadias had plateau-curves at both investigations with lower flow rates than at distal repairs. One boy was strictured. Total frequency of post-TIP strictures was 8%.

MATERIAL AND METHODS

131 boys (age range 0.9-16.9 years) had TIP repair done during 1999 to 2003. 17

RESULTS

Of boys with distal hypospadias 62% had plateau-formed flowcurves at 2 months. 8 boys (22%) were classified as strictured.

CONCLUSIONS

Uroflowmetry post hypospadias repair with TIP, is a doubtful instrument for screening

urethral strictures, since two-thirds of the boys have an obstructed flow two months after surgery and only 8% a real stricture. With time the flow seems to normalise

spontaneously, at least in distal hypospadias.

#-173 (SO)

Is the impaired flow after hypospadias correction due to increased urethral stiffness?

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PURPOSE

A urinary flow-rate curve showing an obstructive voiding pattern or diminished flow-rate without clinical symptoms is commonly found in boys after hypospadias correction. Urethral calibration usually shows no abnormalities. We investigated whether this flow impairment can result from increased neo-urethral wall-stiffness.

MATERIAL AND METHODS

From Poly Vinyl Alcohol (PVA) cryogel a model of the urethra, a 25 cm tube, was produced. Variation of the number of freeze/thaw cycles, thawing-rate and PVA-concentration modulates the

viscoelastic product-properties. A PVA-tube with constant inner diameter and stiffer distal part was constructed, mimicking the distal neo-urethra after hypospadias correction without surrounding elastic spongy body. The flow-rate through this PVA test-tube and a PVA control-tube (no stiff part, same inner diameter) was measured using standard urodynamic equipment.

RESULTS

The flow-rate at a fixed "bladder" pressure of 100 cm H₂O was 9 ml/s through the PVA control-tube and 4 ml/s through the PVA test-tube. After shortening of the stiff part from 5 cm to 4 and 3 cm flow-rate remained 4 ml/s.

CONCLUSIONS

A decreased inner diameter cannot explain the diminished flow-rates found after hypospadias correction, except for cases with urethral strictures. We showed that decreased elasticity of the urethral wall by itself can reduce the flow-rate. After hypospadias correction the reconstructed distal urethra lacks surrounding elastic spongy body, which could increase its wall-stiffness. Post-operative oedema and fibrosis may enhance this. With this mechanism in mind, watchful waiting seems justified when finding a low flow-rate in these children in the absence of clinical symptoms.

#-174 (PWP)

Abnormal urine flow in boys (0-2 years) with distal hypospadias before and after correction

KATJA WOLFFENBUTTEL, MIEKE VAN DIJK*, NIELS WONDERGEM, BIBI PASSCHIER, JUDITH HOEFNAGELS, JUDITH HOEFNAGELS, GWENDOLYN DIELEMAN and DIRK KOK

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PURPOSE

We studied urine flow rate in boys before and after distal hypospadias correction and compared the results with age-matched controls and long-term follow-up data.

MATERIAL AND METHODS

Urine flow and post-void residual were measured at home using an ultrasound flow-probe and bladder scan in 51 controls (0-3 years old, mean 11 months) and in distal hypospadias patients before (n = 42, mean age 16 months) and 3 (n = 28) respectively 9 months (n = 11) after operation. Long-term data (1-10 years) of

63 hypospadias patients were obtained retrospectively.

RESULTS

Of the control group 37% produced interrupted flows, 4% a plateau phase and 59% bell-shaped curves. Maximum flow rate Q_{max} averaged 6.8 ± 4.1 ml/sec, $Q_{max}/voided$ volume 0.26 ± 0.11 1/sec. In the hypospadias group before operation these numbers were: 76% interrupted, 6% plateau, 7.5 ± 2.5 ml/sec and 0.22 ± 0.12 1/sec. Three/ nine months after correction they were: 50%/50%, 13/17%, $6.6 \pm 2.8/7.2 \pm 1.8$ ml/sec and $0.16 \pm 0.09/0.16 \pm 0.09$ 1/sec. In the long-term group 41% had a plateau phase and

and $Q_{max}/voided$ volume was 0.13 ± 0.11 1/sec.

CONCLUSIONS

Intermittent flow often occurs in boys aged 0-3 years and is more common and pronounced in boys with distal hypospadias. In relation to the voided volume hypospadias patients produce an abnormally low urine flow rate before correction. Both in the short and intermediate term after correction this is more pronounced, often presenting as an obstructive pattern. The results warrant further study into the background of these changes, e.g. variances in the passive and dynamic elasticity of the urethra and its surrounding tissue.

Saturday, 18 June 2005: 14:30–15:10

S24: Testis

Chair: P. Androulakakis, J. Barthold

#-175 (P)

Gene expression alterations in cryptorchid males using spermatozoal microarray analysis

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PURPOSE

Using microarray analysis we sought to identify significant differential spermatozoal gene expression between males with a prior history of corrected cryptorchidism and control patients.

MATERIAL AND METHODS

Ejaculates were collected and a semen analysis performed on 10 control patients (mean age 28.5 yrs) and 12 cryptorchid males (mean age 18.3 years; 8 unilateral, 4 bilateral). Motile sperm were isolated by Percoll centrifugation, the total RNA extracted and verified using sperm-specific RT-PCR. Biotin-labeled amplified RNA was hybridized to Affymetrix Human Genome Focus Arrays, according to the

Affymetrix protocol. Differentially expressed genes were identified using permutation t test (permutation $p < 0.05$).

RESULTS

Mean semen volume was not different between control and cryptorchid patients (2.6 versus 3.0 cc, $p=0.56$). Mean sperm density was significantly decreased between control, unilateral and bilateral cryptorchid samples (110 vs. 80 vs. 16 million/cc, $p=0.05$). From the microarray expression data, we identified 47 genes differentially expressed between the two groups. Of these, 42 genes were significantly under-expressed in the cryptorchid samples including many transcriptional factors (cul3, prn1,

hspcd35). Among the 42 was a testis-specific cell-adhesion gene (tpx-1) involved in germ cell maturation. An apoptotic gene (TNF-alpha induced protein 3) was highly over-expressed ($p=0.001$) in the cryptorchid samples suggesting a role for apoptosis as a cause for poor sperm densities.

CONCLUSIONS

Gene expression profiles offer unprecedented insight into the diverse alterations that occur in cryptorchidism. The observed changes in spermatozoal expression of transcriptional and apoptotic genes may result in poor seminal parameters found in boys with a history of cryptorchidism.

#-176 (P)

Cryopreservation of testicular biopsies from cryptorchid boys

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PURPOSE

Approximately 2.5% of boys in the western world are operated annually for cryptorchidism. Up to 20% in unilateral and 70% in bilateral cases face infertility, when reaching adulthood. Animal studies have shown that fertility can be restored by injecting a spermatogonial stem cell suspension into sterile testes. Other studies have ascertained the viability of

testicular tissue grafts — even between species. The present study was undertaken to evaluate the feasibility of cryopreserving intact human testicular tissue for future use in treatment of infertility.

MATERIAL AND METHODS

11 biopsies were taken from 8 boys (age 12-66 months, mean 29 months) with

cryptorchidism (5 unilateral and 3 bilateral) in conjunction orchiopexy. Each biopsy was divided into 6 pieces. 2 pieces were cryopreserved in each of two cryoprotectants. One fresh and two cryopreserved specimens (one from each cryoprotectant) were cultured for two weeks, and all pieces were processed for histology. The culture media was changed and collected twice a week, and the amount of testosterone and inhibin-B measured.

RESULTS

Morphologically there was no difference between the fresh and cryopreserved tissues. The seminiferous tubuli and interstitial cells were well preserved. Neither was there any difference in hormone production. Spermatogonia were recognized histologically, and their

presence verified by c-kit positive immunostaining.

CONCLUSIONS

Intact testicular tissue from prepubertal boys tolerates cryopreservation. The

Sertoli and Leydig cells retain their ability to produce hormones, and spermatogonia expressing c-kit receptors are demonstrable. Thus the obtainment of a biopsy for cryopreservation in conjunction with the operation for cryptorchidism should be considered.

#-177 (P)

Early successful orchidopexy does not prevent from developing azoospermia

FARUK HADZISELIMOVIC

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PURPOSE

Cryptorchidism is accountable for 8% of all sterile patients and for 20% of those with azoospermia. Cryptorchidism, therefore, is the most common etiology of secretory azoospermia. The incidence of Ad spermatogonia (stem cells for fertility) and development of azoospermia was assessed in 20 former cryptorchid patients, all of whom having had a successful orchidopexy in childhood

MATERIAL AND METHODS

The patients were classified into two groups according to the time of surgery: A: <21 months of age (n=5 mean: 10.7 ± 8.6 months) and B: during

childhood, n=15 mean: 10.1 ± 3 years. Nine of the 20 patients (45%) had bilateral cryptorchidism: A=1 and B=8. The number of Ad spermatogonia and entire germ cells was determined. The patients' spermiograms were evaluated at least twice; FSH and testosterone plasma values were estimated.

RESULTS

In group A, all patients had germ cells at the time of surgery (mean: 1.04 ± 1.4 germ cells per tubular cross section); only 6 patients in group B (40%) had no germ cells (mean: 0.17 ± 0.4); A vs. B: p=0.0133. Importantly, there were no Ad spermatogonia present in the entire study population analysed. The plasma FSH of

sixteen patients (80%) was abnormal [median: 16.35 IU/l (IQR 9.075-27.85 95%CI, 3-53)] while the plasma testosterone of all the patients was normal.

CONCLUSIONS

These observations underscore the importance of germ cell development and transformation which take place during mini-puberty in infancy. It further demonstrates that non-obstructive azoospermia in cryptorchidism does not develop because of congenital lack or aplasia of the germ cells. Finally, that the most severe cause of infertility in cryptorchid patients cannot be prevented by an early successful surgery alone.

#-178 (SO)

Surgical varix ligation improves occult sub-fertile semen parameters in adolescent asymptomatic varicoceles without testicular asymmetry

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PURPOSE

The benefit of surgical management of asymptomatic adolescent scrotal varicocele, in the absence of testicular asymmetry, is understudied. Some advocate observation, while others advocate surgery to avoid future

infertility. To date, no reliable predictors of potential future sub-fertility in this group of patients have been identified.

MATERIAL AND METHODS

We followed 12 adolescent boys with an asymptomatic scrotal varicocele without

testicular growth asymmetry. All had normal LH, FSH, and Testosterone levels. Each was followed for 1 year with serial physical examinations. Mean follow-up was 22 months. Semen analysis was obtained to investigate occult oligoasthenoteratospermia. Microsurgical varix ligation was performed on those boys with sub-fertile semen parameters, and

post-operative semen analysis was obtained.

RESULTS

Five boys had normal semen analysis. Seven had sub-fertile semen parameters in sperm count, motility, or morphology, placing them at risk for future infertility. The average semen parameters of the normal group (n=5) was 50.6 million/ml sperm count, 42% motility and 57% normal morphology. The average pre-operative

semen parameters of the sub-fertile group was (n=7) 13.9 million/ml sperm count, 24% motility and 9% normal morphology. After surgical correction of the varicocele, these parameters improved to 25.8 million/ml sperm count, 39% motility, and 15% normal morphology.

CONCLUSIONS

In adolescents with an asymptomatic scrotal varicocele, without testicular asymmetry, semen analysis may be

obtained to identify occult sub-fertile semen parameters. If abnormality with respect to sperm count, motility or morphology is present, surgical correction should be considered. We have shown that in this situation, surgical correction of the varicocele can improve semen parameters. The potential benefits towards future fertility is undetermined.

#-179 (P)

Testicular microlithiasis: what does it mean clinically?

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PURPOSE

Testicular microlithiasis (TM) is an uncommon condition characterised by calcification within the seminiferous tubules. These appear as 1-3mm echogenic foci on US. TM has been associated with both benign and malignant conditions of the testes. However the natural history of TM in the paediatric population is still unclear.

MATERIAL AND METHODS

All patients diagnosed with TM over a 14-year period were included in this study. A search of the radiology database was carried out using the key words

"testicular microlithiasis" and "testicular calcification". A retrospective case note review was then carried out to determine age at diagnosis, presenting symptoms, indication for testicular US, outcome and follow-up.

RESULTS

Over the study period 711 scans were performed in 623 patients. Seven cases (1.1 %) of TM were identified. The mean age at presentation was 12 years (range 7-15 years). Presenting symptoms were testicular pain (n=3), undescended testes (n=2), hydrocoele (n=1) and asymptomatic scrotal swelling (n=1). In 5 cases the TM was bilateral and in 2 cases a solitary

kidney was identified. On yearly sonographic follow-up the TM was less prominent in 1 patient and unchanged in 4. Three patients are currently on yearly sonographic follow-up, 2 are under the care of adult general surgeons and 2 have been lost to follow-up.

CONCLUSIONS

As the natural history of TM in the paediatric population is not well defined, we should review patients annually by means of US. A nationwide registry of patients would allow prospective follow up and improve our understanding of this condition.

#-180 (SO)

Inflammation of the testis and epididymis in otherwise healthy child, is it a true bacterial urinary tract infection?

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PURPOSE

The purpose of this study was to assess the role of bacterial infection in gonadal inflammation of an otherwise healthy children.

MATERIAL AND METHODS

We retrospectively analyzed the medical records of boys with the diagnosis of gonadal inflammation GI (ICD-9 640.0) between 1997 and 2002.

RESULTS

During 1997-2002 182 patients with acute GI were admitted to the hospital. The mean age was 9.8±3.2 years (0.5-17). Medical history for urological or

neurological disease was negative in all patients. Presenting symptom was scrotal pain in 165 patients and swelling in 17 patients. Only 3 patients (5.4%) had accompanying urinary symptoms such as dysuria, frequency or urgency. Mean body temperature was normal $36.9 \pm 0.60^\circ\text{C}$ ($35.8-38.9$). Physical examination was normal beside swollen and tender gonad. Urinalysis was completely normal in 169 (93%) patients; isolated appearance of 0-4 red blood cell was noted in 4 patients and isolate appearance of white blood cells in 9 patients. Urine cultures were negative in all patients. Doppler ultrasound of the scrotum demonstrated non specific

appearance of inflammatory process including swollen testicle and epididymis with increased blood flow in 146 patients (80%), in 9 (5%) torsion of the appendix testis was documented and in 27 (15%) scrotal US was normal. Follow up was available in 40% of the patients all had uneventful recovery, all had normal renal and bladder US, and 3 had normal voiding cystogram. During this period 11 patients with inflammation of the gonad who had positive urine cultures were admitted too. Mean age was 11 ± 6.7 years, 9/11 had known urological abnormality such as spina bifida, neurogenic bladder, obstructive megaureter, reflux, and

urethral stricture post proximal hypospadias repair. 10/11 had abnormal urinalysis. 8/11 had body temperature greater than 38.50°C .

CONCLUSIONS

In the absence of urinary symptoms, positive history for urological or neurological abnormality/disease, and abnormal urinalysis, bacterial infection does not seem to be a causative factor for acute GI. There is neither justification for anti-microbial therapy nor for any further diagnostic imaging.

Saturday, 18 June 2005: 15:10–15:45

S25: Intersex 2

Chair: P. Mouriquand, D. Husmann

#-181 (P)

Towards optimal gonadal diagnosis and treatment of children with dysgenetic gonads

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PURPOSE

Gonads of children with gonadal dysgenesis with Y chromosome sequences in their karyotype are removed to prevent germ cell malignancy, resulting in overtreatment in most patients (cumulative cancer risk: 4-30%), and loss of spontaneous puberty and fertility. To improve clinical treatment we applied morphological analysis and immunohistochemistry. Results were compared to normal embryonic germ cell development.

MATERIAL AND METHODS

Normal male (n=27) and female (n=19) embryonic gonads (15-40 weeks), and neonatal samples were investigated for

c-KIT, PLAP, TSPY, VASA, and OCT3/4, as well as the proliferation marker Ki-67. In addition, 50 gonads of 26 patients with androgen insensitivity syndrome (AIS: n=20), 17 beta-HSD deficiency (n= 6) were studied, as well as gonadal tissues with carcinoma in situ (n> 50), gonadoblastoma (n=6) and invasive germ cell tumors (n> 100).

RESULTS

During normal development, all germ cell markers (and proliferation) declined in time, with the exception of VASA and TSPY. Normal matured germ cells are negative for OCT3/4 and strongly positive for VASA, while OCT3/4 is consistently found in germ cell tumors, including

carcinoma in situ (negative or weakly positive for VASA). Gonadoblastoma contains both OCT3/4 positive and negative germ cells. These characteristics allow distinction between germ cells with a maturation delay from malignant transformation. Based on these observation, 3 patients were identified with early malignant germ cells.

CONCLUSIONS

This study demonstrates that a careful analysis of both morphological and immunohistochemical characteristics of germ cells in patients with dysgenetic gonads is informative to develop a clinical decision tree, minimizing cancer risk and preventing overtreatment.

#-182 (P)

Partial urogenital mobilization: the advantages without the risks

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PURPOSE

Total Urogenital Mobilization (TUM) is an increasingly popular technique for repair of urogenital (UG) sinus and cloacal anomalies. There are no long term data and concerns remain regarding risks of sphincteric musculature injury, stress incontinence and nerve injury to the sphincter and clitoris. Our group has shown the advantages of using the mobilized sinus tissue in the reconstruction. Herein we describe a new

technique, Partial Urogenital Mobilization (PUM), which limits the risks yet allows use of the mobilized sinus tissue.

MATERIAL AND METHODS

Ten patients, 9 with congenital adrenal hyperplasia, and one pure UG Sinus, underwent PUM. The UG sinus is circumferentially mobilized as described for the TUM but the dissection is stopped at the level of the symphysis pubis without

division of the pubourethral ligament. In 9 patients the mobilized sinus was divided ventrally and a flap vaginoplasty was performed. In one a pull-through vaginoplasty was done and the sinus was split dorsally to create the anterior vaginal wall.

RESULTS

The average age at surgery was 33 months, with the average follow-up 14 months.

Cosmesis has been excellent with no vaginal stenosis noted. The majority are not yet potty trained but there has been no incontinence.

CONCLUSIONS

We describe the PUM which allows use of the mobilized sinus and excellent cosmetic results with out the all of the TUM risks. It is applicable to all levels of

vaginal confluence and can easily be converted to a TUM if necessary. Early results are excellent.

#-183 (P)

Musculocutaneous latissimus dorsi free transfer for total phalloplasty in children

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PURPOSE

Total phalloplasty is rarely performed in children due to mutilation of the procedure and dilemma about neophallic size in children. We present musculocutaneous latissimus dorsi free transfer total phalloplasty in children with difficult psychological problems due to penile absence.

MATERIAL AND METHODS

From April 2001 till February 2004 total phalloplasty was performed in 7 boys aged between 10 - 15 years. Indications were micropenis (3), failed epispadias repair (3) and intersex (1). Musculocutaneous latissimus dorsi free flap was harvested on

thoracodorsal artery, vein and nerve. Flap is transferred to the pubic region and anastomosed to femoral artery, saphenous nerve and ilioinguinal nerve. Two-staged urethroplasty was performed in four patients using buccal mucosa, while in remaining three Mitrofanoff channel was created previously. Inflatable penile prosthesis was implanted in two cases after puberty.

RESULTS

Follow-up is from 6 months to 4 years (mean 2,7). Penile size varies from 14 to 17cm in length and from 10 to 12cm in circumference. There were neither partial nor total flap necroses. Donor site appearance was good in three cases while

in remaining four moderate scar is occurred. Function of implanted penile prostheses is satisfactory. Psychological status is significantly improved in all children.

CONCLUSIONS

Phalloplasty in the childhood is indicated to prevent very difficult psychological problems due to penile absence. Musculocutaneous latissimus dorsi flap presents method of choice for phalloplasty in children which enables good neophallic size as in adults. We recommend this type of surgery before puberty with aim to ensure better psychosexual pubertal development.

#-184 (P)

Phalloplasty: best available treatment for 46 xy boys without penis

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PURPOSE

The 46 XY boy without penis still remains a major challenge to the reconstructive urological surgeon. Former treatments like gender reassignment and psychological support have been shown to have a high failure rate. After gaining a large experience with the sensate radial forearm flap in female to male transsexual surgery in more than 200 cases, we started to use this technique for boys without

penis. The first experience in 2 cases is reported.

MATERIAL AND METHODS

Two boys born with exstrophy (17 and 22 years old), having lost most of their penile tissues in former surgeries were selected for treatment with radial forearm phalloplasty. After long discussion with the patients and their relatives and after

they have been contacting transsexuals who underwent the procedure, both boys decided to undergo the surgery

RESULTS

Both procedures were uneventfull. Specific consideration was given to the incorporation of any sensitive penile tissue left, into the neophallus. The nerves of the flap were connected to one

dorsal penile nerve and one ileoinguinal nerve in 1 boy and to 2 ileoinguinal nerves in the second patient.

Patient satisfaction after surgery was extremely high. Psychological evaluation confirms this satisfaction especially on the self esteem level.

Both patients experienced sensitivity in the neophallus and reported sensitivity in the leftovers of their penile tissue.

Both boys report orgasm with stimulation of the neophallus and 1 of the patients ejaculates through the new penis.

Both boys are planned to undergo penile implant surgery within 1 year after the phallic reconstruction.

CONCLUSIONS

This initial success of phalloplasty in boys without penis has convinced us that penile

reconstruction is the optimal treatment for this condition.

This opens new horizons for the treatment of penile agenesis, micropenis, crippled penis, shrivelled penis, some intersex conditions, traumatic amputations and cloacal exstrophy.

#-185 (P)

Phalloplasty and urethroplasty for preliminary reconstruction in infants with penile agenesis: two cases report

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PURPOSE

Female gender has often been assignment in newborns with penile agenesis with possible result of an unhappy population with sexual orientation problems.

Androgens have prenatal effect on the brain and gender cannot be altered by psychosexual and endocrine treatments, consequently these patients should be raised as males. Because definitive phalloplasty cannot be realized before age of 15 years, preliminary reconstruction was carried-out with satisfactory outcomes in two infants

PATIENTS AND METHODS

In two newborns with classical aphallia, male gender was assignment. At age of 9

and 17 months, urethral division from the rectum was performed through an anterior-transanorectal-approach in prone-knee-chest position and phalloplasty and complete urethroplasty carried-out using abdominal skin flap and bladder/buccal mucosa free graft in supine-lithotomy position

RESULTS

The immediate postoperative outcome showed an excellent result in both, however 12 and 42 months later, one passes urine regularly from an urethral meatus at the tip of his penis, keeping a superb cosmetic result, but the other one through a scrotal urethrostomy, performed afterward, and needs redo-distal-urethroplasty. Phalloplasty

provided an adequate male appearance in both

CONCLUSIONS

Patients affected by penile agenesis are better raised as males. Nowadays, in high specialized Centers, final phalloplasty in adult achieves good results and has to be considered the closing performance in patients born with aphallia. Nevertheless, social and psychological reasons justify early palliative phalloplasty and urethroplasty. This method has shown satisfactory outcome in our hands and it could be the correct treatment for this rare and extreme genital malformation

#-186 (PWP)

Developing a web-based clinical counseling tool about intersex conditions

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PURPOSE

We have developed an online clinical counseling tool, with animation, to teach

parents about urogenital development and intersex conditions (<http://www.sickkids.ca/childphysiology/cwpw/Genital/GenitalIntro.htm>). Our aim is to

address a crucial need for highly visual, interactive, yet understandable teaching material on this subject.

MATERIAL AND METHODS

A needs assessment conducted with the intersex team at a large children's hospital identified a pressing need for visual teaching aids. A professional medical illustrator, working with a urologist, anatomist, social worker and endocrinologist, developed illustrations, animations, and a flexible Flash-based website architecture to meet the needs of common counseling situations. During the iterative design process, focus groups were conducted with parents in the intersex clinic to assess usability, optimum

levels of visual complexity, and educational value of the site

RESULTS

A module on standard urogenital anatomy and sexual differentiation went online in November 2004. Within a month, it had 576 visitors and is being rapidly adopted for teaching at our hospital and internationally. Clinicians and patients have commented on the site's unique utility, clarity, and sensitivity. Searching "genital development" on Google returns this site as the first of over 590,000 hits,

a measure of the number of institutional and support group websites that have linked to it.

CONCLUSIONS

The site has already had a demonstrated impact among those who live with and counsel patients on urogenital conditions. A section on major intersex conditions and hypospadias will be added early in 2005. Once this is online, we will conduct quantitative evaluations of the site's impact on patient/parent education and decision-making.